

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK**

IN RE FOREIGN EXCHANGE
BENCHMARK RATES ANTITRUST
LITIGATION

No. 1:13-cv-07789-LGS

**MEMORANDUM OF LAW IN SUPPORT OF
PLAINTIFFS' MOTION FOR CLASS CERTIFICATION**

(REDACTED)

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EXPLANATION OF CITATION FORMS

The following citation forms are used in this memorandum:

Parties

- “Class Plaintiffs” are Aureus Currency Fund, L.P., The City of Philadelphia, Board of Pensions and Retirement, Employees’ Retirement System of the Government of the Virgin Islands, Employees’ Retirement System of Puerto Rico Electric Power Authority, Fresno County Employees’ Retirement Association, Haverhill Retirement System, Oklahoma Firefighters Pension and Retirement System, State-Boston Retirement System, Syena Global Emerging Markets Fund, LP, Tiberius OC Fund, Ltd., Value Recovery Fund L.L.C., and United Food and Commercial Workers Union and Participating Food Industry Employers Tri-State Pension Fund, J. Paul Antonello, Marc G. Federighi, Thomas Gramatis, Doug Harvey, Izee Trading Company, John Kerstein, Michael Melissinos, Mark Miller, Robert Miller, Richard Preschern d/b/a Preschern Trading, Peter Rives, Michael J. Smith, Casey Sterk, and Systrax Corporation.
- “Defendants” are Settling Defendants and Non-Settling Defendant.
- “Settling Defendants” are Bank of America, BTMU, Barclays, BNP Paribas, Citigroup, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan, Morgan Stanley, RBC, RBS, Soc Gen, Standard Chartered, and UBS.
- “Non-Settling Defendant” is Credit Suisse.
- “Bank of America” or “BofA” is Bank of America Corporation, Bank of America, N.A., and Merrill Lynch, Pierce, Fenner & Smith Incorporated.
- “BTMU” is The Bank of Tokyo-Mitsubishi UFJ, Ltd.
- “Barclays” is Barclays Bank PLC and Barclays Capital Inc.
- “BNP Paribas” or “BNP” is BNP Paribas Group, BNP Paribas North America Inc., BNP Paribas Securities Corp., and BNP Prime Brokerage, Inc.
- “Citigroup” or “Citi” is Citigroup Inc., Citibank, N.A., Citicorp, and Citigroup Global Markets Inc.
- “Credit Suisse” is Credit Suisse AG, Credit Suisse Group AG, and Credit Suisse Securities (USA) LLC.
- “Deutsche Bank” or “DB” is Deutsche Bank Securities Inc. and Deutsche Bank AG.
- “Goldman Sachs” or “GS” is The Goldman Sachs Group, Inc. and Goldman, Sachs & Co.

- “HSBC” is HSBC Holdings PLC, HSBC Bank PLC, HSBC North America Holdings Inc., HSBC Bank USA, N.A., and HSBC Securities (USA) Inc.
- “JPMorgan” or “JPM” is JPMorgan Chase & Co. and JPMorgan Chase Bank, N.A.
- “Morgan Stanley” or “MS” is Morgan Stanley, Morgan Stanley & Co. LLC, and Morgan Stanley & Co. International PLC.
- “RBC” is RBC Capital Markets LLC.
- “RBS” is The Royal Bank of Scotland Group PLC, The Royal Bank of Scotland PLC, and RBS Securities Inc.
- “Soc Gen” is Société Générale.
- “Standard Chartered” is Standard Chartered Bank.
- “UBS” is UBS AG, UBS Group AG, and UBS Securities LLC.

Other Defined Terms

- “Affected Currency Pairs” means those currency pairs identified in Appendix A.
- “Benchmark Rate” is an FX rate calculated and published at a particular time of day by a third-party, such as the WM/Reuters Closing Spot Rate, and the ECB reference rate.
- “Class Member” or “Class Members” refers to members of the “OTC Class” and/or “Exchange Class.”
- “Classes” means the OTC Class and Exchange Class.
- “Class Period” means the period between December 1, 2007 and December 31, 2013, inclusive.
- “Ex. __” refers to an exhibit to the Declaration of Christopher M. Burke in Support of Class Certification.
- “Lead Counsel” means Scott+Scott Attorneys at Law LLP and Hausfeld LLP.



I. INTRODUCTION

Defendants are the dominant market-making banks in the foreign exchange (“FX”) market. The above chat between FX traders [REDACTED] (Credit Suisse) and [REDACTED] (Goldman Sachs) is but one of thousands of chats demonstrating that Defendants agreed to fix FX prices by widening bid-ask spreads in at least 52 currency pairs. The conspiracy was expansive, encompassing FX traders around the globe from each of the 16 Defendants. Despite the reach of the conspiracy, the *modus operandi* of the cartel was simple: use an interconnected network of electronic chat rooms to persistently and systematically discuss FX prices to be charged to customers and other sensitive competitive information with competitors for the purpose of widening spreads. As a result, Defendants’ conspiracy had the effect of raising prices when Class Members bought FX and lowering prices when Class Members sold FX, resulting in injury to Class Members.

To date, four Defendants have pleaded guilty to violating the U.S. antitrust laws by agreeing to eliminate worldwide competition in the purchase and sale of the EUR/USD currency pair (the most heavily traded currency pair), while a fifth received cooperation amnesty. Another Defendant pleaded guilty to conspiring to fix prices of certain emerging market currencies. Government agencies in the U.S., UK, and elsewhere have fined at least five other Defendants for misconduct in their respective FX businesses. Among them, New York’s Department of Financial Services (“NYDFS”) fined Credit Suisse \$135 million for FX misconduct, including the inappropriate sharing of information about spreads to be charged to customers. These 11

Defendants have collectively paid over \$11 billion in fines. In this action, 15 out of the 16 Defendants have settled with Plaintiffs, paying over \$2.31 billion. Credit Suisse remains the lone holdout.

Plaintiffs now move pursuant to Rules 23(a) and 23(b)(3) of the Federal Rules of Civil Procedure to certify the following two litigation classes:

OTC Class: All persons who, between December 1, 2007 and December 31, 2013 (inclusive) entered into a total of 10 or more FX spot, forward, and/or FX swap trades directly with one or more Defendants in the 52 Affected Currency Pairs, where such persons were either domiciled in the United States or its territories or, if domiciled outside the United States or its territories, traded in the United States or its territories.

Exchange Class: All persons who, between December 1, 2007 and December 31, 2013 (inclusive) entered into a total of 10 or more trades of FX futures contracts on a U.S. exchange.

Exclusions from both Classes: Excluded from the Classes are the Defendants and their parents, subsidiaries, affiliates, directors, and employees. Also excluded from the Classes are any judicial officer presiding over this action and the members of his/her immediate family and judicial staff, and any juror assigned to this action. Finally, trades whose prices were set on the basis of benchmark rates, such as the WM/Reuters FX closing spot rates or the ECB reference rates, are excluded.¹

Each Class brings a single claim for relief against Credit Suisse under Section 1 of the Sherman Act, 15 U.S.C. §1. For purposes of certifying their antitrust claims for trial, the Classes have focused on Defendants' conspiracy to widen FX bid-ask spreads, which represent the price that Class Members must pay to transact in FX with market makers such as Defendants.

As demonstrated below, Plaintiffs satisfy the requirements of Federal Rule of Civil Procedure 23(a). The Classes are ascertainable and numerous, each containing tens of thousands of members such that joinder is impracticable. Proof of the existence, nature, and scope of the

¹ The Class definitions, exclusions, and list of the Affected Currency Pairs are set forth in Appendix A attached hereto.

antitrust conspiracy alleged by the Classes is common to all members. The named Plaintiffs' claims are typical of the Classes because Defendants' conspiracy affected all members of the Classes. Named Plaintiffs are adequate representatives of the Classes they seek to represent, and Class Counsel are well-qualified.

Plaintiffs also satisfy the requirements of Rule 23(b)(3). Plaintiffs will use common evidence to prove each element of the Classes' Sherman Act claims. First, Plaintiffs will demonstrate that Defendants, including Credit Suisse, agreed to fix FX prices. Common evidence of the agreement to restrain trade will include, among other things, Defendants' guilty pleas, Credit Suisse's Consent Order, other government findings, Defendants' documents, including chat room transcripts, witness testimony, and expert econometric analyses of market wide FX trading. As detailed below, Defendants engaged in a persistent, systematic, and interconnected conspiracy to widen spreads and acted in furtherance of the conspiracy by sharing sensitive competitive information, including spreads (prices), customer identity, volume, and other order flow. Their conspiracy was intended to and did, in fact, cause bid-ask spreads to widen throughout the FX market. The evidence viewed as a whole – as required by Supreme Court and Second Circuit precedent – demonstrates an overarching agreement to fix FX prices.

Credit Suisse may protest that the conduct described in this memorandum is episodic with the bad actors siloed in different chat rooms. However, a cartel operating in a worldwide, 24-hour-a-day, dynamic financial market must be flexible if it is to be effective. The evidence describing chats to fix prices and communicate other sensitive competitive information is compelling – thousands of communications in over 100 permanent chat rooms with interconnected membership. The evidence inexorably leads to the conclusion that Defendants agreed to, and did, fix prices across dozens of currency pairs.

Plaintiffs will use common evidence to establish that Defendants' conspiracy injured all or virtually all members of the Classes during the Class Period. Profs. Bjønnes and Ljungqvist opine that they can measure impact and damages through common formulae that compare FX prices during the Class Period with a post-conspiracy "clean period" (2014-15) to compute the overcharge on each of Class Members' trades. For their model, Profs. Bjønnes and Ljungqvist rely on principles of finance and economics known as market microstructure and use Trade Cost Analysis ("TCA"), which is widely accepted among financial regulators and academic financial economists. Consistent with Plaintiffs' theory of liability, their model shows Defendants' conspiracy injured more than 99% of OTC Class Members by widening bid-ask spreads and therefore increasing Class Members' trade costs. Prof. Bjønnes and Ljungqvist's results are also consistent with the nature of Defendants' conspiracy. Defendants' conspiracy widened bid-ask spreads – *i.e.*, increased the prices at which Class Members bought and decreased the prices at which they sold.

Plaintiffs will use common proof to establish the amount of damage caused to Class Members. Using the same model that measures impact, Profs. Bjønnes and Ljungqvist compute each Class Member's damage on a trade-by-trade basis, permitting them to sum the results to show total Class-wide damages to the OTC Class. The model uses common damage formulae applicable to each Class Member. As a result, common, rather than individualized, issues predominate.

Finally, Plaintiffs also satisfy Rule 23(b)(3)'s superiority requirement. A single, consolidated action is far superior to a raft of individual lawsuits. Each lawsuit would have to prove the existence of the exact same conspiracy using the same evidence. A class action

therefore allows the aggregation of evidence and expert analysis to answer the common questions of agreement, injury, and damages.

The Classes satisfy Rules 23(a) and (b)(3). Accordingly, Plaintiffs respectfully request that the Court certify the Classes and appoint Christopher M. Burke of Scott+Scott Attorneys at Law LLP and Michael D. Hausfeld of Hausfeld LLP as Class Counsel.

II. STATEMENT OF FACTS

A. Common Evidence Will Show Defendants, Including Credit Suisse, Conspired to Fix FX Prices by Widening Spreads and Eliminating Competition

1. The FX Market

The FX market is where currencies are bought and sold. It is a global market, trading 24 hours a day around the world.² The FX market is predominantly an over-the-counter (“OTC”) market.³ Counterparties trade with each other without an intermediating exchange. A small amount of FX trading is also done through exchanges, such as the Chicago Mercantile Exchange (“CME”).⁴

Currencies are bought and sold in currency pairs, *e.g.*, euro / dollar (EUR/USD),⁵ because each foreign exchange transaction is effectively the purchase of one currency and the sale of another.⁶ The first currency in the pair is the base currency (here, EUR) and reflects what currency is being bought or sold.⁷ The second currency in the pair (here, USD) is the reference or quote currency. A person buying EUR/USD will buy euros (the base) and pay dollars (the

² Ex. 1, Bank for International Settlements, Triennial Central Bank Survey, Foreign exchange turnover in April 2013: preliminary global results (hereinafter “BIS, Triennial Central Bank Survey, Preliminary Results 2013”) at 3.

³ During the Class Period, over 95% of FX trading occurred OTC. *Id.* at 9, Table 1.

⁴ See Ex. 2 (Yanez Dep.) at 61:25-62:4; 65:2-11.

⁵ Currency abbreviations are described in Appendix A.

⁶ See Expert Report of Geir Høidal Bjønnes and Alexander Ljungqvist (“Bjønnes-Ljungqvist Report”), ¶37.

⁷ Ex. 2 (Yanez Dep.) at 62:18-21.

reference or quote). In contrast, a person selling EUR/USD will sell euros and receive dollars. Thus, the price to buy or sell a given currency pair is reflected by its exchange rate.⁸

Defendants, such as Credit Suisse, are FX dealer banks, each of whom acts as a “market maker” or “liquidity provider” in the FX market. Defendants quote prices at which they are willing to buy or sell a designated volume of a given currency pair. Quotes typically consist of a “bid” price (the price at which a bank offers to purchase a currency) and an “ask” price (the price at which a bank offers to sell a currency). For example, for 5 million EUR/USD, a dealer could quote a bid-ask spread of 1.2345 / 1.2347. The first number (1.2345) is the bid price at which the dealer is willing to *buy* the base currency (euros). The second number (1.2347) is the ask price at which the dealer is willing to *sell* the base currency. As this example shows, dealers generally provide price quotes to four decimal points, with the final digit known as a “percentage in point” or “pip.”⁹

The difference between the bid and ask is the “bid-ask spread” or “spread.”¹⁰ In the above example, the spread is two pips (1.2347 selling price – 1.2345 buying price). The spread is how an FX dealer is primarily compensated for acting as a market maker.¹¹ Generally, FX dealers want wider spreads, because it allows them to buy lower and sell higher, increasing the likelihood for more profits, and mitigating the risk that the market moves against them.¹² Customers, however, want narrower spreads so that they can buy at lower prices and sell at higher prices.¹³ The bid-ask spread is therefore a price that customers pay to transact in FX.¹⁴

⁸ Ex. 2 (Yanez Dep.) at 75:15-23.

⁹ Pips are also referred to by traders in conversation as “points.” *See, e.g.*, Ex. 3 (Altadonna Dep.) at 280:22-281:11; *see also* Ex. 2 (Yanez Dep.) at 251:25-252:12.

¹⁰ Ex. 2 (Yanez Dep.) at 77:22-23.

¹¹ Bjønnes-Ljungqvist Report, ¶51.

¹² Ex. 2 (Yanez Dep.) at 80:16-81:19 and 82:11-15.

¹³ Ex. 2 (Yanez Dep.) at 86:14-87:4 and 89:12-21.

¹⁴ Ex. 2 (Yanez Dep.) at 77:15-21; *see also* Ex. 3 (Altadonna Dep.) at 103:25-104:10.

There are four types of FX instruments relevant to this Motion. Relevant to the OTC Class are spot trades, forwards, and FX swaps. These three FX instruments account for approximately 93%-94% of the OTC trades in the U.S.¹⁵ Relevant to the Exchange Class is the FX futures contract, which is a standardized contract trading on an exchange and calling for delivery of a specified quantity of a specified currency, or a cash settlement, on a specified date.

The pricing of spot transactions is critically important; spot prices are the foundation for pricing *all* FX instruments.¹⁶ The prices of forwards and FX swaps are derived from the underlying spot price, while futures prices closely track the spot price.¹⁷ Thus, every time the spot price moves, the prices of other FX instruments move.¹⁸ For this reason, conduct that affects the spot price will affect the price of all other FX instruments.

Finally, the FX market exhibits characteristics that antitrust law and economics have identified as being conducive to collusion. Plaintiffs' expert Hal J. Singer, Ph.D. assessed the competitive nature of the FX market using a standard framework used by industrial organization economists known as the structure/conduct/performance ("SCP") paradigm.¹⁹ Regarding structure and following the Price Fixing guidelines issued by the DOJ, Dr. Singer found:

- Defendants dominate FX trading, accounting for approximately 90% of all U.S. volume during the Class Period, such that the FX market is "highly concentrated."²⁰
- There are no close substitutes for the FX liquidity provided by Defendants or for FX generally.²¹

¹⁵ Ex. 1, BIS, Triennial Central Bank Survey, Preliminary Results 2013 at 8, Graph 3. Options and other exotic instruments make up the remaining 6%-7% of FX instruments traded OTC, but they are not included in the class definition.

¹⁶ Bjønnes-Ljungqvist Report, ¶46; *see also* Ex. 2 (Yanez Dep.) at 63:7-10.

¹⁷ Bjønnes-Ljungqvist Report, ¶46; *see also* Ex. 2 (Yanez Dep.) at 63:7-12.

¹⁸ Bjønnes-Ljungqvist Report, ¶46.

¹⁹ Class Certification Report of Hal J. Singer, Ph.D. ("Singer Report"), ¶3.

²⁰ Singer Report, ¶¶4, 25-26; *see also* Ex. 2 (Yanez Dep.) at 103:15-104:7.

²¹ *See* Singer Report, ¶¶4, 27; *see also* Ex. 2 (Yanez Dep.) at 106:2-107:2.

- FX is a homogenous commodity and the pricing of FX varies predictably with common factors.²²
- Class Members transact regularly and repeatedly with Defendants, often at predictable times, and Defendants analyze these patterns.²³
- The social and professional ties in the FX trading community created incentives and opportunities for collusion.²⁴
- Defendants' FX traders maintained real-time contact with each other to instantaneously exchange information.²⁵

2. The Conspiracy to Fix FX Prices and Eliminate Competition

Beginning at least as early as December 1, 2007, Defendants conspired to fix the prices of at least 52 currency pairs. Defendants' conspiracy included both G-10 and emerging market currency pairs.²⁶ In furtherance of their conspiracy, Defendants persistently used interconnected multibank chat rooms to disseminate sensitive competitive information, including spreads to be made to their customers.

a. Chat Rooms Facilitated the Price-Fixing Conspiracy

Chat rooms were integral to the conspiracy.²⁷ By the beginning of the Class Period, Defendants' FX traders communicated with each other daily using Bloomberg or Reuters-based chat rooms.²⁸ Chat rooms allowed these competitors to communicate instantaneously and

²² See Singer Report, ¶¶4, 28-30. Common factors include "market-specific factors (including the interbank price, trade size, volatility, liquidity, and order type), as well as factors specific to the transaction type and the type of customer (such as customer volume, sophistication, and likelihood of being informed)." *Id.*, ¶31. While this case covers 52 currency pairs, all currencies can be exchanged, at a price, into another currency, and through arbitrage, price discrepancies between currencies are removed.

²³ Singer Report, ¶¶4, 31.

²⁴ Singer Report, ¶¶4, 32.

²⁵ Singer Report, ¶¶4, 33.

²⁶ During the Class Period, the top three currency pairs (EUR/USD, USD/JPY, and GBP/USD) accounted for over half of all FX market turnover by notional volume. See Ex. 1, BIS, Triennial Central Bank Survey, Preliminary Results 2013, at 5 (Graph 1), and 11 (Table 3).

²⁷ See, e.g., Ex. 4, *U.S. v. Barclays PLC*, Plea Agreement, ¶4(h) ("In furtherance of the [price-fixing] conspiracy, the defendant and its co-conspirators engaged in communications, including near daily conversations, some of which were in code, in an exclusive electronic chat room. . .").

²⁸ See Ex. 5, CS-FXLIT-10017196 at 96 (On February 20, 2007, [REDACTED] (Credit Suisse), [REDACTED] (RBS), and [REDACTED] (Goldman Sachs) [REDACTED]).

continuously around the globe. Once formed, chat rooms could, and did, exist for years.²⁹ All that was required to create a chat room or initiate a one-off chat conversation with another trader was a Bloomberg account, which Defendants' FX traders had.³⁰

Defendants often named their chat rooms. Although purported competitors, Defendants sometimes chose names which highlighted their conspiracy, such as "The Cartel" and "Yen Cartel."³¹ Other names, such as the "Essex Express," reflected that some of its participants lived in Essex, England and rode the same train together to work. And still other names reflected the currencies traded by the chat room participants, such as "The Sterling Lads."

While individual chat rooms would often emphasize certain currencies, they would regularly discuss other currency pairs. The Cartel focused on EUR/USD, the Sterling Lads primarily traded sterling (another name for the British pound), the "Yen Cartel" focused on trading Japanese yen, but all of those groups routinely discussed numerous other currencies.

As Appendix B demonstrates, FX traders were simultaneous members of – and active participants in – numerous chat rooms. For example, in 2011 alone, Ashton (Barclays),³² who has been indicted for price-fixing by the DOJ, was a member of The Cartel, a founder of The Sterling Lads, [REDACTED] [REDACTED] permitting him continuous and instantaneous access to traders from each of the other Defendant banks.

²⁹ Appendix B provides the name, list of participants, dates, and currency pairs discussed of numerous chat rooms used by Defendants' FX traders. Appendix B is not an exhaustive list of all multibank chat rooms; it is merely representative of the evidence Plaintiffs can and will present at trial.

³⁰ *Id.*; see also Ex. 3 (Altadonna Dep.) at 90:1-20.

³¹ See Appendix B.

³² Appendix C provides relevant employment information for each trader identified in this memorandum.

Chat rooms also allowed FX traders to maintain and grow their lines of collusive communication even if they moved to another bank. As traders moved between competitor banks, they took their relationships with them, growing a strong interconnected network. As an example, [REDACTED] remained a member of “The Dream Team” chat room even as he moved from Bank of America and Credit Suisse.³³ [REDACTED]

[REDACTED]³⁴ Each member of the “RBS Reunion” chat room worked at RBS at some point in the past. Once located at a new bank, an FX trader simply had to rejoin or reform the chat room.³⁵

By participating in numerous interconnected chat rooms, Defendants created an efficient network to quickly agree on spreads, share sensitive competitive information, coordinate trading, and monitor and enforce their conspiracy. Chat rooms facilitated the conspiracy.

b. Defendants Agreed to Fix Bid-Ask Spreads and Share Sensitive Competitive Information

Unlike exchange-based markets, there is no centralized platform displaying offered prices and consummated transactions in the OTC FX market. Generally, only the parties to an OTC FX trade know the details of the trade, including, price, customer identity, and volume. This valuable information enables market participants to forecast market moves, and is used by market makers in setting their prices.³⁶ Absent an agreement to fix prices, no bank would share this valuable and sensitive information with its competitors; however, as explained here, Defendants *did* share this information with one another. By agreeing to share this information on

³³ Ex. 6, GS-FX-CIVIL-02170840 at 57-58 (On August 16, 2011, members of The Dream Team [REDACTED])

³⁴ Ex. 3 (Altadonna Dep.) at 91:20–92: 11.

³⁵ See, e.g., Ex. 7, GS-FX-CIVIL-02189427 at 39-40 (On October 5, 2009, [REDACTED])

³⁶ Ex. 3 (Altadonna Dep.) at 111:15-23, 113:9-23, 132:2-16.

a persistent, systemic, and interconnected basis, Defendants compounded their informational edge. This allowed Defendants to agree to fix and maintain wider FX spreads at the expense of Class Members.

Defendants' sharing of sensitive competitive information, including spreads, violated internal bank policies as well as the Federal Reserve Bank of New York's "Guidelines for Foreign Exchange Trading Activities."³⁷ In December 2008, Deutsche Bank's [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]³⁸ Credit Suisse [REDACTED]

[REDACTED]

[REDACTED]³⁹ All Defendants had similar policies.⁴⁰ Despite these warnings, Defendants' traders continued sharing sensitive competitive information in contravention of the external and internal policies.

Defendants' traders and supervisors knew exchanging spreads and other sensitive competitive information was wrong. In June 2009, [REDACTED] (Goldman Sachs) [REDACTED] (Goldman Sachs) [REDACTED]

[REDACTED]

³⁷ Ex. 8, Federal Reserve Bank of New York, Guidelines for Foreign Exchange Trading Activities, Foreign Exchange Committee, at 11.

³⁸ Ex. 9, DB-0940487 at 87.

³⁹ Ex. 10, CS-FXLIT-00000023 at 24; *see also* Ex. 11, CS-FXLIT-00017640 at 42.

⁴⁰ *See, e.g.,* Ex. 12, *In the Matter of Peter Little*, Federal Reserve Docket No. 18-010-E-I, 18-010-CMP-I (Feb. 16, 2018), ¶45 ("During the relevant period, Barclays maintained policies prohibiting: the improper disclosure of Barclays' proprietary and client confidential information; market abuse, including manipulative trading; and coordination with competitors in violation of applicable competition laws."). Little was an FX trader at Credit Suisse prior to his position at Barclays.



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In response, [REDACTED] Despite the warning, [REDACTED] and traders from other Defendants continued exchanging sensitive competitive information throughout the Class Period.⁴² In fact, they were encouraged to do so by their supervisors.⁴³

Class Plaintiffs' expert Robin Poynder prepared a Chat Report which is illustrative of Defendants' widespread sharing of sensitive competitive information. Mr. Poynder analyzed Defendants' communications for a random sample of 91 trading days during the Class Period. These communications are often couched in short-hand language and abbreviations commonly used by FX traders, but difficult for persons not active in FX trading to understand. Mr. Poynder determined that sensitive competitive information was shared between Defendants on *90 of the 91* sample days.⁴⁴ The only day in the sample where sensitive competitive information was not

⁴¹ Ex. 13, GS-FX-CIVIL-02911022 at 23.

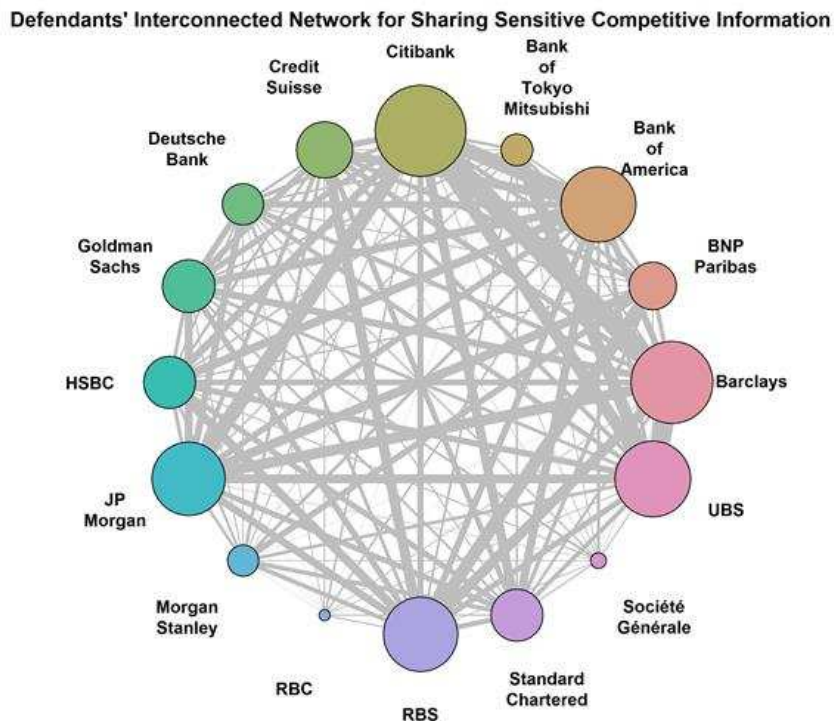
⁴² See Ex. 14, *In the Matter of The Goldman Sachs Group, Inc.*, NYDFS Consent Order, ¶¶11-22.

⁴³ See, e.g., Ex. 15, Employment Tribunal Judgment, Christopher Ashton, Case No. 3202066/15 (Sept. 9, 2016) at 24, ¶27 ("The Claimant told the Employment Tribunal that, from the start of his employment, he was encouraged to be connected to the market and that this meant having friendly relationships with, and speaking to, peers at competitor banks and with customers, in order to obtain as much information as possible about the market."); Ex. 16, Employment Tribunal Judgment, Carly McWilliams, Case No. 3200384/15 (April 19, 2016) at 9, ¶25 (The court found that McWilliams' manager's (Ramchandani) conduct was "consistent with her belief that her manager encouraged and condoned the practice of FX traders to share information about particular types of client with traders at other banks in order to gain market information, even if it would identify that client."); Ex. 12, *In the Matter of Peter Little*, Federal Reserve Docket No. 18-010-E-I, 18-010-CMP-I (Feb. 16, 2018), ¶6 (Little was not only "aware that other FX traders at Barclays, including the traders that he supervised, participated in chat rooms with traders at competitor banks," he encouraged Barclay's traders to obtain information from competitors and communicate with competitors on his behalf.), ¶13 ("When Trader 1 told Little he sought entry to the Cartel 'to build up [his] eur contacts,' Little responded: 'I need to rely on you so get to work . . . need both sides ldn [London] and ny [New York].'").

⁴⁴ Expert Report of Robin Poynder, Bank Chats ("Chat Report"), ¶4. Utilizing Defendants' own policies and guidance, Mr. Poynder defines sensitive competitive information as follows: "pricing, order, or customer

shared between Defendants was December 4, 2013 – after the beginning of government investigations and the closing of multibank chat rooms by Defendants.⁴⁵

Using only the randomly selected trading days, Mr. Poynder’s Chat Report contains the following diagram which powerfully illustrates Defendants’ interconnected network for sharing information.⁴⁶ Each bank circle is sized relative to its total number of instances of shared Sensitive Competitive Information. Each connecting line is sized relative to the number of instances the two banks share such information. The armature, once completed, forms an “Orb of Conspiracy”:



information that FX traders at other banks could plausibly exploit to their advantage, to their customers’ disadvantage, or both – as distinguished from generalised commentary or ‘market colour.’” Chat Report, ¶2.

⁴⁵ Chat Report, ¶4.

⁴⁶ Chat Report, ¶112.

Regarding Defendants' conduct, Plaintiffs' expert economist Dr. Singer uses common statistical techniques to demonstrate "Mr. Poynder's findings are consistent with the hypothesis that the sharing of sensitive competitive information was pervasive, in the sense of occurring on all or almost all trading days during the Class Period."⁴⁷ Singer concludes that if sensitive competitive information was actually exchanged on fewer than 95% of 1,531 trading days in the Class Period, then the probability that Defendants would have exchanged sensitive competitive information on 90 of the 91 days of the random sample is only 5.4%.⁴⁸

Plaintiffs will next set forth examples of chat room discussions that are common proof of the conspiracy.

i. Fixing Spreads Charged to Customers

Common evidence shows that Defendants routinely shared and agreed upon their spreads (prices) to quote to customers, enabling Defendants not to compete with each other. As early as March 2007, [REDACTED] (Goldman Sachs) [REDACTED] (Credit Suisse) [REDACTED] (RBS) [REDACTED]

[REDACTED]

[REDACTED]⁴⁹ Later, in January 2008, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

⁴⁷ Singer Report, ¶36.

⁴⁸ *Id.*

⁴⁹ Ex. 17, CS-FXLIT-10020301 at 25-26.

⁵⁰ Ex. 18, GS-FX-CIVIL-02202114 at 17. The New York Department of Financial Services described the conduct in this chat as "Spread Collusion." Ex. 78, *In the Matter of Credit Suisse AG*, NYDFS Consent Order, ¶37. Earlier, on June 6, 2007, [REDACTED] Ex. 19, GS-FX-CIVIL-02206796 at 806.

Chat transcripts demonstrate Defendants, including Credit Suisse, regularly shared and agreed on spreads for their internal spread matrices or grids.⁵¹ Defendants used their spread grids as a price list and a price floor for customers.⁵² A spread grid is a pricing matrix that lists the bid-ask spreads for groups of currency pairs, *e.g.*, G-10 or emerging markets, for certain volumes at normal market conditions, liquidity, and time of day.⁵³

In the following examples, Credit Suisse agreed with a competitor bank on spread grids to show customers. In June 2009, [REDACTED] (Credit Suisse) [REDACTED] (Morgan Stanley) [REDACTED]

[REDACTED]⁵⁴ [REDACTED]

[REDACTED]⁵⁵ [REDACTED]

[REDACTED]

[REDACTED]

In July 2011, [REDACTED] (Credit Suisse) [REDACTED] (Barclays), [REDACTED]

[REDACTED]⁵⁶ [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

⁵¹ See, *e.g.*, Ex. 20, UBS ZINC CIV 000252087 at 2196-97 (On January 5, 2010, members of The Cartel

[REDACTED] (UBS): [REDACTED]

[REDACTED] (Barclays): [REDACTED]

[REDACTED] (Citi): [REDACTED]

[REDACTED] : Ex. 21, UBS ZINC CIV 000049605 at 08-09 (On January 20, 2011, members of

[REDACTED] (Barclays): [REDACTED]

[REDACTED] (BOTM): [REDACTED]

⁵² Ex. 2 (Yanez Dep.) at 166:10-167:3.

⁵³ [REDACTED]

[REDACTED] Ex. 2 (Yanez Dep.) at 163:2-16.

[REDACTED]

[REDACTED] Ex. 2 (Yanez Dep.) at 163:15-164:9.

⁵⁴ Ex. 3 (Altadonna Dep.) at 296:17-301:22.

⁵⁵ Ex. 22, CS-FXLIT-10387680 at 80.

⁵⁶ Ex. 23, CS-FXLIT-04236229 at 30.

On September 20, 2011, [REDACTED] (Goldman Sachs) [REDACTED] (Credit Suisse), [REDACTED]

[REDACTED]⁵⁷ [REDACTED]

[REDACTED]⁵⁸

On the same day that [REDACTED]

[REDACTED] (Goldman Sachs) [REDACTED] (Credit Suisse),

[REDACTED] (JPMorgan), and [REDACTED] (RBS). [REDACTED]⁵⁹ [REDACTED]

In addition to fixing and widening spread matrices, Defendants colluded to fix daily spreads quoted to customers in the FX spot market. [REDACTED] (Credit Suisse) [REDACTED]

[REDACTED]⁶⁰ [REDACTED]

[REDACTED]⁶¹

In the following examples, a Credit Suisse FX trader agrees with the trader at a competitor on spreads to charge customers:

⁵⁷ Ex. 24, GS-FX-CIVIL-03410947 at 951-52.

⁵⁸ See Ex. 25 (Bowen Dep.) at 84:16-87:16.

⁵⁹ Ex. 26, GS-FX-CIVIL-02172971 at 83-84.

⁶⁰ Ex. 3 (Altadonna Dep.) at 198:12-22.

⁶¹ See Ex. 3 (Altadonna Dep.) at 291:13-294:18; Ex. 27, JPMC-CIVIL-0000052607 at 9-10 ([REDACTED] (BofA) [REDACTED]

; Ex. 38, CS-FXLIT-00819235 at 37 (On May 10, 2011, [REDACTED]

(UBS) [REDACTED].

- In November 2009, [REDACTED] (Credit Suisse) [REDACTED] (RBS), [REDACTED]
[REDACTED]⁶²
- In July 2011, in the “CAD, CHF, and Stuff” chat room, [REDACTED] (Credit Suisse)
[REDACTED] (RBS) [REDACTED]
[REDACTED]⁶³
- In February 2012, in the Yen Cartel, [REDACTED] (JPM) [REDACTED]
[REDACTED] (Credit Suisse) [REDACTED] (BofA) [REDACTED]
[REDACTED]⁶⁴
- In another chat room, in August 2012, [REDACTED] (Credit Suisse) [REDACTED]
[REDACTED]
[REDACTED]⁶⁵
- In July 2012, [REDACTED] (BNP) [REDACTED] (Credit Suisse), [REDACTED]
[REDACTED]⁶⁶

The discovery record in this case is replete with examples of spread fixing.⁶⁷ In the 91-day random sample, Mr. Poynder's Chat Report documents 522 communications where

⁶² Ex. 29, RBS IN RE FX LITIG 00023541 at 41.

⁶³ Ex. 30, CS-FXLIT-00464143 at 64.

64 Ex. 31, CITI-FX-CIVIL 00242725 at 28.

Ex. 32, JPMC-CIVIL-0000627708 at 14.

66 Ex. 33, AO 018202-DOJ at 24.

67 See, e.g., Ex. 34, DB-0912275 at 75-76 (January 21, 2010 chat transcript where [REDACTED] (Credit Suisse) [REDACTED] (Deutsche Bank) [REDACTED]; Ex. 35, CS-FXLIT-04939163 at 65-66 (On December 2, 2010 in the “RBS Reunion” chat room, after [REDACTED] (RBS) [REDACTED] [REDACTED] (Credit Suisse) [REDACTED])

... (Morgan Stanley) ; Ex. 36, DB-0779634 at 45-46 (On May 15, 2009, (Credit Suisse) ; Ex. 37, CITI-FX-CIVIL 00006042 at 47) (On February 4, 2008, the “Horras” chat room members ; Ex. 38, UBS_ZINC CIV 000096807 at 12 (On October 11, 2011, in the Slaaaggggsssss 2 chat room (Credit Suisse) to Barclays, HSBC, UBS, and RBS); Ex. 39, UBS_ZINC CIV_000101064 at 68 (On November 2, 2011, (Credit Suisse)); Ex. 40, BARC-FX-CIV_00030564 at 65 (On September 28, 2010, “Trap 5” chat room members, including (Credit Suisse) and (Barclays) chat members, including (Credit Suisse) and (BNP) ; Ex. 42, CITI-FX-CIVIL-00227342 at 61-62 (On January 4, 2012, member of The Cartel chat room ; Ex. 43, CS-FXLIT-06033680 at 87 (On March 1, 2012, members of The Sterling Lads (Credit Suisse):

Defendants shared spread information. Based on these results, Dr. Singer finds that “one can infer statistically with 95 percent confidence that the total number of [sensitive competitive information] involving spreads that would have been uncovered in a review of every day of the Class Period would be between 7,157 and 10,407.”⁶⁸

ii. Sharing Other Sensitive Competitive Information

Defendants regularly shared other competitively sensitive “order flow” information.⁶⁹ Defendants exchanged details of recent transactions, including volume, direction, and customer identity.⁷⁰ Defendants disclosed to each other open price contingent orders (stop-loss or take profit), which indicated areas of support or resistance in the market.⁷¹ Defendants informed each other whether they were, or intended to be, long or short a particular currency.⁷² This

(RBS): [REDACTED]

⁶⁸ Singer Report, ¶38.

⁶⁹ Ex. 2 (Yanez Dep.) at 68:21-72:30; Ex. 3 (Altadonna Dep.) at 78:9-79:9, 272:12-273:6.

⁷⁰ See, e.g., Ex. 44, CS-FXLIT-01253336 at 37 (On November 7, 2012, [REDACTED] (HSBC) [REDACTED]; Ex. 2 (Yanez Dep.) at 338:23-341:21; Ex. 45, GS-FX-CIVIL-02205914 at 15 (On January 14, 2008, [REDACTED] (Credit Suisse) and [REDACTED] (RBS) [REDACTED]

⁷¹ See, e.g., Ex. 46, BTFX-00044908 at 08 (On July 21, 2009, [REDACTED] (BOTM) [REDACTED] (DB): [REDACTED] Ex. 47, DB-0813241 at 41 (On July 21, 2009 [REDACTED] (Barclays): [REDACTED]

[REDACTED]; Ex. 48, GS-FX-CIVIL 02202980 at 81, 88 (On February 14, 2008, [REDACTED] (Credit Suisse) and [REDACTED] (RBS) s [REDACTED]; Ex. 49, GS-FX-CIVIL-02202585 at 88-89 (On February 29, 2008 [REDACTED]

⁷² See, e.g., Ex. 18, GS-FX-CIVIL-02202114 at 28) (On January 22, 2008, members of “Spot Monkey Inc.” [REDACTED] (Goldman Sachs): [REDACTED]; *id.* at GS-FX-CIVIL-02202130 [REDACTED]; Ex. 50, CITI-FX-CIVIL 00048727 at 29 (On January 26, 2009, in the Horras chat room, [REDACTED].

information constituted sensitive competitive information under Credit Suisse's Antitrust Policy.⁷³

For example, in December 2007, [REDACTED] (Morgan Stanley) [REDACTED] (Credit Suisse)

[REDACTED]⁷⁴ [REDACTED]

[REDACTED]

[REDACTED]

.. [REDACTED]

[REDACTED]⁷⁵ [REDACTED]

[REDACTED]⁷⁶ This is

but one example of Defendants routinely coordinating positions and trading strategies.⁷⁷

The discovery record is full of similar examples.⁷⁸ In the 91-day random sample, Mr. Poynder's Chat Report documents 7,974 communications where Defendants shared order flow information.⁷⁹ Combined with the exchanges of spreads in the random sample, Dr. Singer finds "one can infer statistically with 95 percent confidence that the total number of [sensitive

⁷³ Ex. 3 (Altadonna Dep.) at 231:13–232:22.

⁷⁴ Ex. 51, CS-FXLIT-10117134 at 34.

⁷⁵ Ex. 3 (Altadonna Dep.) at 225:20–227:10.

⁷⁶ Ex. 3 (Altadonna Dep.) at 227:14–22.

⁷⁷ See, e.g., Ex. 52, GS-FX-CIVIL-02204927 at 73-74; Ex. 53, CS-FXLIT-06033628 at 32-33.

⁷⁸ See, e.g., Ex. 54, CITI-FX-CIVIL-00153491 at 499-500 (On March 11, 2011, in the "Old Gits" chat room,

[REDACTED] (Barclays) [REDACTED] (Credit Suisse) [REDACTED]

[REDACTED]; Ex. 55, CS-FXLIT-05370309 at 10-11 (On November 29, 2011, [REDACTED] (JPM)

[REDACTED] (Credit Suisse) [REDACTED]

[REDACTED] .. [REDACTED]

[REDACTED]

responded, [REDACTED]

[REDACTED] Ex. 56, BARC-FX-CIV 00049812 at 14

(On February 22, 2012, [REDACTED] (Barclays)

[REDACTED] (Credit Suisse) [REDACTED] (RBC)

[REDACTED]

(UBS) [REDACTED]

⁷⁹ Chat Report, ¶¶74, 107 (7,495 + 479 = 7,974).

competitive information] exchanges that would have been uncovered in a review of every day of the Class Period would be between 115,805 and 170,071.”⁸⁰

c. Concealing, Monitoring, and Enforcing the Conspiracy

Chats confirmed that the traders knew their conduct was inappropriate and constituted price fixing. For example, in February 2011, [REDACTED] (JPMorgan) [REDACTED] (Credit Suisse) [REDACTED] (BofA) [REDACTED]

[REDACTED]⁸¹ [REDACTED]

[REDACTED] In July 2012, [REDACTED] (RBC) [REDACTED] (Standard Chartered) [REDACTED]

[REDACTED]

[REDACTED]⁸² In January 2013, [REDACTED] (Standard Chartered), [REDACTED] (Citi), and [REDACTED] (Morgan Stanley) [REDACTED]

[REDACTED]

[REDACTED]⁸³

Defendants restricted access to chat rooms used to facilitate their conspiracy and used code words and other methods to conceal their conspiracy and evade surveillance.⁸⁴ [REDACTED]

(JPM) [REDACTED]

(Citigroup).⁸⁵ Defendants also used code names to identify customers to each other. [REDACTED]

[REDACTED]

⁸⁰ Singer Report, ¶37.

⁸¹ Ex. 57, CS-FXLIT-00695321 at 22-23.

⁸² Ex. 58, UBS_ZINC_CIV_00016448 at 48.

⁸³ Ex. 59, MSFX00033198 at 99.

⁸⁴ See, e.g., Ex. 60, JPMC-CIVIL-0000738740 at 45-46. [REDACTED] (JPM), [REDACTED] (Citigroup), and [REDACTED] (Barclays) [REDACTED]

⁸⁵ Ex. 61, BARC-FX-CIV_00055765 at 77 (Other traders in this chat include [REDACTED] (Barclays) and [REDACTED] (UBS)).

[REDACTED]⁸⁶ The group even employed a one-week training period to learn the new codes.⁸⁷ Defendants' FX traders also used voice calls, texts, or in-person meetings to evade surveillance.⁸⁸

Defendants monitored each other for compliance with the conspiracy. For example,

(Citigroup)

⁸⁹ When first invited to “The Cartel,” (Barclays)

(Citigroup)

[REDACTED]⁹⁰ Traders apologized to their competitors if they failed to share sensitive competitive information. For example, [REDACTED] (HSBC) [REDACTED] (Credit Suisse), [REDACTED]

(RBS) ██████████⁹¹ In another chat, ██████████ (Goldman Sachs) ██████████ (RBS) ██████████

92 Similarly, [REDACTED] (UBS) [REDACTED]

[REDACTED]⁹³ Admonitions to comply
with the conspiracy appear frequently throughout the Class Period.

Defendants enforced the conspiracy by punishing participants who were not sharing enough information with the group. For example, in January 2009, members of The Dream

⁸⁶ See Ex. 62, *In the Matter of BNPP*, NYDFS Consent Order, at 11-12, ¶¶44-47.

⁸⁷ See Ex. 63, BNP0092575 at 75-76 ([REDACTED]); *id.* at BNP0092577-83

⁸⁸ See, e.g., Ex. 64, BARC-FX-CIV-00220840 at 40 [REDACTED]
[REDACTED]; Ex. 65, HBUS-FXLITIG-0002117 T00001 at 05-08

⁸⁹ Ex. 66, CS-FXLIT-05019878 at 82 (Other participants in the chat room include [REDACTED] (Credit Suisse), and traders at Bank of America and Standard Chartered.).

Ex. 60, JPMC-CIVIL-0000738740 at 46-47.

91 Ex. 67, CS-FXLIT-11458581 at 88.

⁹² Ex. 68, CS-FXLIT-11484125 at 34-36. (Other participants in this chat include [REDACTED] (Credit Suisse) and [REDACTED] (JPM)).

⁹³ Ex. 69, UBS-ZINC-CIV-000112271 at 76.

Team, [REDACTED] (Goldman Sachs), [REDACTED] (Credit Suisse), [REDACTED] (RBS), [REDACTED] (ex-Credit Suisse),
[REDACTED] (Merrill Lynch) [REDACTED] (Deutsche Bank) [REDACTED]

[REDACTED]⁹⁴ [REDACTED]

[REDACTED]⁹⁵ [REDACTED]

[REDACTED]

[REDACTED]

3. The End of the Conspiracy and the Aftermath

[REDACTED]

a. Banks Ban Multi-Bank Chat Rooms and Terminate Traders

As a result of government investigations into their business, in late 2012 and early 2013, Defendants began to ban their FX traders from participating in multibank chat rooms with FX traders from competing banks. In December 2012, [REDACTED] (Morgan Stanley) [REDACTED] (Standard Chartered) [REDACTED] (Citi), [REDACTED]

[REDACTED]⁹⁶ [REDACTED]

[REDACTED] In February 2013, [REDACTED] (Standard Chartered)

[REDACTED] (UBS), [REDACTED]

[REDACTED]⁹⁷ [REDACTED]

[REDACTED] In July 2013, [REDACTED] (JPM)

⁹⁴ Ex. 70, GS-FX-CIVIL-02033516 at 32-33.

⁹⁵ Ex. 70, GS-FX-CIVIL-02033516 at 32-33.

⁹⁶ Ex. 71, CITI-FX-CIVIL_00514213 at 19.

⁹⁷ Ex. 72, UBS_ZINC_CIV_000203342 at 44.

[REDACTED]

[REDACTED]⁹⁸

Finally, in February 2013, [REDACTED] (UBS) [REDACTED]

[REDACTED]⁹⁹ [REDACTED]

[REDACTED] (now at GS) [REDACTED]

[REDACTED]

[REDACTED]

In addition to shuttering multibank chats, beginning in 2013, Defendants terminated, suspended, or oversaw the departure of numerous FX traders whose collusive activities animated the chat rooms. Appendix C provides summary details of known suspensions and terminations.

b. Guilty Pleas and Government Actions Relating to FX Misconduct Demonstrate the Existence of a Conspiracy

Defendants' conduct in the FX market has been extensively investigated by numerous authorities in the United States and elsewhere. These authorities have secured guilty pleas, consent orders, and made other determinations, resulting in punishment to Defendants and their employees, including, to date, heavy fines, imprisonment, banishment from the financial industry or employment at specific banks, and other adverse actions. This evidence is common to the classes.

Guilty pleas confirm the existence of an agreement to fix FX prices in multiple currencies. Defendants Barclays, Citigroup, JPMorgan, and RBS pleaded guilty violating Section 1 of the Sherman Act, 15 U.S.C. §1, for conspiring to fix EUR/USD prices from December 2007 to January 2013, by using electronic chat rooms on a near-daily basis. DOJ

⁹⁸ Ex. 73, AO 006090-DOJ at 95.

⁹⁹ Ex. 74, CS-FXLIT-06143903 at 06-07.

collectively fined them over \$2.5 billion. During the Class Period, EUR/USD represented over 20% of trades by volume. Separately, DOJ is pursuing criminal cases against former head FX traders Usher (RBS and JPM), Ramchandani (Citibank), and Ashton (Barclays) relating to EUR/USD price fixing.

DOJ has also secured guilty pleas for price fixing Central and Eastern European, Middle Eastern, and African (“CEEMEA”) emerging market currencies. The guilty pleas cover at least eight CEEMEA currencies,¹⁰⁰ when traded against the U.S. dollar, the euro, or one another. Two former emerging markets traders, Katz (Barclays and BNP Paribas), and Cummins (Citibank) pleaded guilty to price fixing CEEMEA currencies. From approximately January 2007 until July 2013, they, along with FX dealers at competing institutions, “engaged in blatant collusion and succeeded in manipulating exchange rates for multiple currencies to their advantage.”¹⁰¹ Defendant BNP Paribas pleaded guilty for conspiring to fix prices in CEEMEA currencies and agreed to pay a fine of \$90 million. DOJ is also pursuing charges against Aiyer (JPM).

In addition to the common evidence that Class Plaintiffs have set forth in this memorandum and will set forth at trial, the guilty pleas secured by DOJ provide direct proof of price fixing of at least 10 currencies relating to a time period that largely overlaps the Class Period.

Apart from DOJ, other government authorities have fined Defendants or banished their former FX Traders for their willful misconduct in the FX market. These government authorities include, among others, the U.S. Commodity Futures Trading Commission, the U.K. Financial Conduct Authority, the Office of the Comptroller of the Currency, the Board of Governors of the

¹⁰⁰ CEEMEA currencies identified in the guilty pleas are HUF, PLN, CZK, RON, RUB, TRY, ILS, and ZAR. See Ex. 75, *United States v. Jason Katz*, 17-CRIM-003. Information at 1.

¹⁰¹ Ex. 79, DOJ Press Release, *Foreign Currency Exchange Dealer Pleads Guilty to Antitrust Conspiracy* (Jan. 4, 2017).

Federal Reserve System, and NYDFS. The common thread running throughout each of the regulatory findings is Defendants' rampant sharing of confidential information via chat rooms and their efforts to manipulate prices. As NYDFS stated, "[p]ut simply, Barclays employees helped rig the foreign exchange market. They engaged in a brazen 'heads I win, tails you lose' scheme to rip off their clients"¹⁰² A chart summarizing these government actions is attached at Appendix E.

c. Credit Suisse's Consent Order Admits FX Gross Misconduct

On November 13, 2017, NYDFS announced a \$135 million fine against Credit Suisse for manipulating prices of currency pairs and improperly sharing customer information. NYDFS stated, "Certain Credit Suisse executives in the bank's foreign exchange unit deliberately fostered a corrupt culture that failed to implement effective controls in its foreign exchange trading business, which allowed the bank's foreign exchange traders and others to violate New York State law and repeatedly abuse the trust of their customers over the course of many years."¹⁰³ NYDFS determined that, from at least 2008 to 2015, Credit Suisse FX traders consistently "participated in multi-party electronic chat rooms, where traders shared information, including confidential customer information, to support coordinated trading activity, and attempted to manipulate currency prices and benchmark rates."¹⁰⁴ The Consent Order, which Defendant Credit Suisse AG signed, does not speak of episodic, *ad hoc*, and inconsistent conduct, but rather of participation in multi-party chat **rooms**, the manipulation of **prices**, a corrupt **culture**, and lack of controls over its FX **trading business**, resulting in the lifetime

¹⁰² Ex. 76, NYDFS Press Release, *NYDFS Announces Barclays to Pay \$2.4 Billion, Terminate Employees for Conspiring to Manipulate Spot FX Trading Market* (May 20, 2015).

¹⁰³ Ex. 77, NYDFS Press Release, *DFS Fines Credit Suisse AG \$135 Million for Unlawful, Unsafe and Unsound Conduct in Its Foreign Exchange Trading Business* (Nov. 13, 2017).

¹⁰⁴ Ex. 78, *In the Matter of Credit Suisse*, NYDFS Consent Order at 4, ¶11.

employment banishment of no fewer than seven of its former FX traders. It is evidence common to the Classes, substantially overlaps the Class Period, and, ultimately, confirms Plaintiffs' claims of a conspiracy to fix FX prices.

B. Class Plaintiffs Are Representative of the Classes

This Action is brought by 26 Plaintiffs who participated in the FX market by engaging in various types of transactions affected by Defendants' conspiracy; including FX spot trades, forwards, FX swaps, and/or FX futures contracts. During the Class Period, Plaintiffs either purchased these instruments OTC directly from one or more of the Defendants, on a centralized exchange, or through both means.

1. The OTC Plaintiffs

The OTC Plaintiffs are 13 entities, including a municipal board, investment funds, and pension funds that, like other members of the OTC Classes, engaged in FX spot and forward transactions directly with one or more of the Defendants during the Class Period. Collectively, the OTC Plaintiffs transacted directly with Defendants and made thousands of transactions in various currency pairs. For example, the City of Philadelphia Board of Pensions and Retirement alone traded directly with Defendants Barclays, BNP, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan, Morgan Stanley, RBC, RBS, Standard Chartered, and UBS and transacted in no fewer than 41 of the 52 currency pairs.¹⁰⁵ Similarly, Plaintiff Fresno County Employees Retirement Association traded directly with at least 10 Defendants and transacted in 35 of the 52 currency pairs.¹⁰⁶ Likewise, State-Boston Retirement System traded directly with at

¹⁰⁵ See Appendix F.

¹⁰⁶ *Id.*

least 14 Defendants and transacted in 43 of the 52 currency pairs.¹⁰⁷ Appendix F provides examples of the OTC Plaintiffs' trading with Defendants and the currency pairs traded.

2. The Exchange Plaintiffs

The Exchange Plaintiffs are 14 persons and entities that engaged in FX transactions on centralized exchanges like the CME and ICE during the Class Period.¹⁰⁸ The Exchange Plaintiffs traded FX futures contracts. The Exchange Plaintiffs transacted in all of the currency pairs offered through the CME or ICE. Exchange Plaintiff Doug Harvey alone transacted in futures contracts for 19 currency pairs during the Class Period. *See* Appendix F.

C. Common Evidence Will Show that Defendants' Conspiracy Impacted and Caused Damage to the Classes

Profs. Bjønnes and Ljungqvist opine that both the questions of impact and damages can be answered on a class-wide basis using common formulae.¹⁰⁹ As explained in their report, Defendants' agreement to widen spreads and acts in furtherance thereof allowed members of the conspiracy to extract higher transaction fees due to reduced competition. The resulting harm suffered by all or virtually all Class Members was reflected in higher prices when buying and lower prices when selling. It is well-accepted in the FX microstructure literature that order flow information conveys pricing-relevant information and that it strongly predicts future exchange rate movements.¹¹⁰ A market maker in possession of order flow information thus has a significant advantage over the broader market that allows it to earn additional profit from informed trading – *e.g.*, by front running customer orders in anticipation of future price

¹⁰⁷ *Id.*

¹⁰⁸ Plaintiff Systrax Corporation is a proposed class representative for both the OTC and the Exchange Classes.

¹⁰⁹ *See* Bjønnes-Ljungqvist Report, ¶24.

¹¹⁰ *See id.*, ¶65.

movements, or by trading more profitably in the interdealer market.¹¹¹ By routinely sharing sensitive competitive information, such as spreads, customer identities, and order flow with each other in furtherance of their price-fixing agreement, Defendants further increased their information advantage over the broader market, which simultaneously increased the “adverse selection risk” faced by all other market participants.¹¹² Defendants’ conduct had the effect of widening spreads across all trading venues and transaction types, even in the absence of explicit agreements to widen spreads on every trade.¹¹³

Using generally accepted econometric techniques, the experts comparatively analyze Class Members’ FX transactions executed during and after the alleged conspiracy. Because Defendants shuttered multi-bank chat rooms after government investigations began and fired many of the culpable traders by the end of 2013, the experts used the years 2014 and 2015 as a “clean” or post-conspiracy benchmark period, which they find provides both robust and conservative estimates.¹¹⁴

In this case, spreads that Class Members paid on their FX trades represent transaction costs. Profs. Bjønnes and Ljungqvist employed a well-accepted Trade Cost Analysis (“TCA”) approach to analyze the transaction costs associated with Class Members’ FX trades during and after the conspiracy.¹¹⁵ They ran a set of regressions on Defendants’ trade data from the benchmark clean period to determine the extent to which specific variables influence transaction costs in an untainted market.¹¹⁶ They then applied the coefficients on the variables in the clean period regression to individual Class Member trades during the conspiracy period to derive

¹¹¹ See *id.*, ¶66.

¹¹² See *id.*, ¶¶81, 83.

¹¹³ See *id.*, ¶¶86-88.

¹¹⁴ See *id.*, ¶¶102-03.

¹¹⁵ See *id.*, ¶28.

¹¹⁶ See *id.*, ¶106.

estimated “but for” transaction costs that would have prevailed absent Defendants’ collusion. By comparing these “but for” transaction costs to actual transaction costs calculated from Defendants’ transaction data, Plaintiffs’ experts were then able to calculate the spread damages that Class Members suffered on each of their trades during the 2007-2013 Class Period. After performing preliminary calculations based on the still-developing database of trades from the Class Period, Profs. Bjønnes and Ljungqvist determined that more than 99% of Class Members were injured in at least one of their trades by Defendants’ conspiracy to widen spreads.

Finally, Profs. Bjønnes and Ljungqvist’s model incorporates any “individualized” factors influencing FX prices into common formulae. For example, the model accounts for the fact that FX prices vary based on specific market conditions – *e.g.*, volatility, liquidity, or even time of day – by incorporating those market conditions as variables in the regressions that yield “but for” transaction costs. Similarly, by calculating damages on every transaction, the regressions account for features that vary among class members. In other words, to the extent that FX prices may be influenced by market-specific or counterparty-specific factors that vary from trade to trade, their regression-based damages model accounts for those factors through common formulae that apply equally to every unique trade made by each Class Member during the Class Period.

III. ARGUMENT

A. Legal Standards for Rule 23(b)(3) Class Certification

To certify a class, the plaintiff must establish by a preponderance of the evidence that each of the four elements of Rule 23(a) and one of the bases for certification under Rule 23(b) are satisfied. *Waggoner v. Barclays PLC*, 875 F.3d 79, 93 (2d Cir. 2017), *cert. denied*, No. 17-1209, 2018 WL 1116150 (Apr. 30, 2018). Rule 23(a) provides that a class may be certified if the plaintiff demonstrates numerosity, commonality, typicality, and adequacy of the class plaintiffs.

Fed. R. Civ. P. 23(a). In addition, Rule 23(b)(3) permits a case to be litigated as a class action if (1) “questions of law or fact common to class members predominate over any questions affecting only individual members,” and (2) “a class action is superior to other available methods for fairly and efficiently adjudicating the controversy.” Fed. R. Civ. P. 23(b)(3).

While the Court may consider merits questions to the extent “that they are relevant to determining whether the Rule 23 prerequisites for class certification are satisfied,” Rule 23 does not grant courts a license “to engage in free-ranging merits inquiries at the certification stage.” *Amgen Inc. v. Conn. Ret. Plans and Trust Funds*, 568 U.S. 455, 466 (2013). “‘In determining the propriety of a class action, the question is not whether the plaintiff . . . will prevail on the merits, but rather whether the requirements of Rule 23 are met.’” *In re Air Cargo Shipping Servs. Antitrust Litig.*, No. 06-MD-1775, 2014 WL 7882100, at *29 (E.D.N.Y. Oct. 15, 2014) (quoting *Eisen v. Carlisle and Jacquelin*, 417 U.S. 156, 178 (1974)). Therefore, the Court may not assess the weight of the evidence concerning a common merits question, such as the conspiracy element under Section 1 of the Sherman Act, if failure of the necessarily common evidence “ends the case for the class and for all individuals alleged to compose the class.” *See Amgen*, 568 U.S. at 474 (holding that court of appeals erred in requiring plaintiffs to prove materiality in order to obtain certification of securities fraud class action).

B. The Classes Satisfy Rule 23(a)

As demonstrated below, the Classes satisfy each of Rule 23(a)’s requirements and should be certified to pursue their Sherman Act claims against Credit Suisse.

1. The Many Thousands of Members in Each of the Classes Make Joinder Impracticable

Rule 23(a)(1) requires the class to be “so numerous that joinder of all members is impracticable.” “[B]ut this requirement ‘does not mandate that joinder of all parties be

impossible.” *In re LIBOR-Based Fin. Instruments Antitrust Litig.*, 11 MD 2262 (NRB), 2018 WL 1229761, at *3 (S.D.N.Y. Feb. 28, 2018).¹¹⁷ Courts presume numerosity for classes of 40 or more members. *Shahriar v. Smith & Wollensky Rest. Grp., Inc.*, 659 F.3d 234, 252 (2d Cir. 2011) (citing *Consol. Rail Corp. v. Town of Hyde Park*, 47 F.3d 473, 483 (2d Cir. 1995)).

Here, numerosity is readily satisfied. Through Defendants’ data relating to the OTC Class and data from the Chicago Mercantile Exchange and Intercontinental Exchange relating to the Exchange Class, Plaintiffs have identified tens of thousands of OTC Class Members, and thousands of Exchange Class Members. Each of the Classes satisfies numerosity.

The members of each class are objectively ascertainable, satisfying that “modest threshold requirement.” *See In re Petrobras Secs.*, 862 F.3d 250, 269 (2d Cir. 2017), *cert. petition filed* Nov. 2, 2017. The Classes are described in a clear and precise manner so that the Court may readily identify class members based on objective criteria. *See id.* (“The ascertainability requirement, as defined in this Circuit, asks district courts to consider whether a proposed class is defined using objective criteria that establish a membership with definite boundaries.”). Both class definitions provide definite boundaries for class membership, including limits relating to type of trade, currency pairs, geographic scope, and timeframe. *See id.* at 269 (stating that ascertainability “will only preclude certification if a proposed class definition is indeterminate in some fundamental way”). Accordingly, the Classes are well-defined and ascertainable.

2. Plaintiffs’ Case Raises Common Questions Regarding Liability and Damages

Rule 23(a)(2) requires that there be “questions of law or fact common to the class.” Fed. R. Civ. P. 23(a)(2). This threshold is satisfied if the question is “capable of classwide resolution

¹¹⁷ Unless otherwise noted, citations are omitted and emphasis is added.

– which means that determination of its truth or falsity will resolve an issue that is central to the validity of each one of the claims in one stroke.” *Wal-Mart Stores, Inc. v. Dukes*, 564 U.S. 338, 350 (2011). When assessing commonality, even “a single common question will do.” *Id.* at 359.

Commonality is met where the plaintiff demonstrates “that class members ‘have suffered the same injury.’” *Dukes*, 564 U.S. at 350. Common questions arise “[w]here the same conduct or practice by the same defendant gives rise to the same kind of claims from all class members.” *Moreno v. Deutsche Bank Americas Holding Corp.*, 15-cv-9936-LGS, 2017 WL 3868803, at *4 (S.D.N.Y. Sept. 5, 2017) (quoting *Johnson v. Nextel Commc’ns Inc.*, 780 F.3d 128, 137-38 (2d Cir. 2015)). Commonality is regularly found in antitrust cases because questions of the existence, nature, and scope of an antitrust conspiracy are common. *In re NASDAQ Market-Makers Antitrust Litig.*, 169 F.R.D. 493, 509 (S.D.N.Y. 1996) (“[A]llegations concerning the existence, scope, and efficacy of an alleged antitrust conspiracy present important common questions sufficient to satisfy the commonality requirement of Rule 23(a)(2).”); *see, e.g., Dial Corp. v. News Corp.*, 314 F.R.D. 108, 113 (S.D.N.Y. 2015); *Air Cargo*, 2014 WL 7882100, at *41. Commonality “‘does not mean that all issues must be identical as to each [class] member.’” *Moreno*, 2017 WL 3868803, at *5.

Here, Plaintiffs’ allegations that Defendants agreed to fix prices through persistent, systematic, and interconnected communications raise numerous common questions, including:

- Did Defendants, including Credit Suisse, enter into an agreement to fix FX prices?
- What was the scope of the agreement?
- Were all or virtually all Class Members injured by transacting at least once at FX prices rigged by Defendants’ conduct?
- Can the damages suffered by individual Class Members be determined using common formulae?

These common questions satisfy Rule 23(a)(2)'s commonality requirement. *See Cordes & Co. Fin. Servs., Inc. v. A.G. Edwards & Sons, Inc.*, 502 F.3d 91, 105 (2d Cir. 2007) (“allegations of the existence of . . . conspiracy are susceptible to common proof”); *LIBOR*, 2018 WL 1229761, at *111 (“the question of whether a conspiracy to suppress LIBOR existed is a common one”).

3. Plaintiffs’ Claims Are Typical of the Classes

Rule 23(a)(3) requires that “the claims or defenses of the representative parties are typical of the claims or defenses of the class.” Fed. R. Civ. P. 23(a)(3). This standard is satisfied when “each [class] member’s claim arises from the same course of events, and each class member makes similar legal arguments to prove the defendant’s liability.” *In re Elec. Books Antitrust Litig.*, No. 11 MD 2293 (DLC), 2014 WL 1282293, at *12 (S.D.N.Y. Mar. 28, 2014) (citing *Brown v. Kelly*, 609 F.3d 467, 475 (2d Cir. 2010)). “Factual differences in the amount of damages, date, size or manner of purchase, the type of purchaser . . . and other such concerns will not defeat class certification when plaintiffs allege that the same unlawful course of conduct affected all members of the proposed class.” *In re Sumitomo Copper Litig.*, 182 F.R.D. 85, 92 (S.D.N.Y. 1998).

“Rather than focusing on the precise nature of plaintiffs’ injuries, the typicality requirement may be satisfied where ‘injuries derive from a unitary course of conduct by a single system.’” *In re Amaranth Nat. Gas Commodities Litig.*, 269 F.R.D. 366, 376 (S.D.N.Y. 2010). The standard is “not highly demanding,” *Dial Corp.*, 314 F.R.D. at 113, and is readily satisfied in price-fixing conspiracies which aim to prove “a conspiracy, its effectuation, and damages therefrom.” *In re Currency Conversion Fee Antitrust Litig.*, 264 F.R.D. 100, 111 (S.D.N.Y. 2010) (collecting cases).

Here, Plaintiffs all assert claims arising from the same single course of conduct as the Classes they seek to represent: the persistent, systematic, and interconnected price-fixing

conspiracy among Credit Suisse and Defendants to widen spreads. Plaintiffs are not subject to any unique defenses because they all traded in the same FX market as members of the Classes they seek to represent. *See* Appendix G. Plaintiffs' claims are typical of those brought by the Classes and Plaintiffs are therefore suitable representatives.

4. Plaintiffs Will Fairly and Adequately Represent the Classes

Rule 23(a)(4) requires that “the representative parties will fairly and adequately protect the interests of the class.” Fed. R. Civ. P. 23(a)(4). The adequacy determination focuses on whether: “‘1) plaintiff’s interests are antagonistic to the interest of other members of the class and 2) plaintiff’s attorneys are qualified, experienced and able to conduct the litigation.’” *Cordes*, 502 F.3d at 99. “A conflict ‘between named parties and the class they seek to represent’ will be sufficient to defeat class certification only if the conflict is ‘fundamental.’” *Langan v. Johnson & Johnson Consumer Cos. Inc.*, No. 3:13-cv-1470, 2017 WL 985640, at *12 (D. Conn. Mar. 13, 2017) (quoting *In re Flag Telecom Holdings, Ltd. Sec. Litig.*, 574 F.3d 29, 35 (2d Cir. 2009)).

a. Plaintiffs’ Interests Are Aligned with the Classes’ and Plaintiffs Are Qualified to Represent the Classes

Here, the Class Representatives and members of the Class share the same interest in prosecuting this action – ensuring the greatest recovery for the Classes from Defendants. Class Plaintiffs, like the members of the Classes they seek to represent, paid more or received less for their FX trades as a result of Defendants’ conduct. Class Plaintiffs seek the same relief for themselves that they seek for all others in the class – damages incurred as a result of Defendants’ conduct. Class Plaintiffs have already demonstrated their qualifications to represent the Classes by vigorously prosecuting the action, having recovered more than \$2.3 billion in settlements for

the Classes to date. Class Plaintiffs have done so through their own efforts, including participating in discovery and traveling and sitting for depositions.

b. Plaintiffs' Counsel Are Qualified to Represent the Classes and Should Be Appointed Class Counsel Under Rule 23(g)

Rule 23(g) requires that “a court that certifies a class must appoint class counsel.” Fed. R. Civ. P. 23(g)(1). This Court has already found Interim Co-Lead Counsel have the qualifications, experience, and ability to prosecute the claims on behalf of both the OTC and Exchange-based Plaintiffs. *See* ECF Nos. 145, 700. For the reasons discussed in Plaintiffs’ opening and reply memoranda of law filed in support of their motion for attorneys’ fees, the Court should appoint Christopher M. Burke of Scott+Scott Attorneys at Law LLP and Michael D. Hausfeld of Hausfeld LLP as Class Counsel for both Classes. ECF Nos. 938 at 20-21; 939-2 (Scott+Scott Firm Résumé and Biographies); 939-3 (Hausfeld Firm Résumé and Biographies); 1035 (Reply Memorandum). They have zealously represented Plaintiffs and the putative Classes and are prepared to litigate through trial the remaining claims against Credit Suisse.

C. The Classes Satisfy Rule 23(b)(3)

Plaintiffs seek to certify the Classes pursuant to Rule 23(b)(3). Rule 23(b)(3) requires that (1) “questions of law or fact common to class members predominate over any questions affecting only individual members,” and (2) “a class action is superior to other available methods for fairly and effectively adjudicating the controversy.” Rule 23(b)(3) was designed to “encompass[] those cases in which a class action would achieve economies of time, effort, and expense, and promote uniformity of decision as to persons similarly situated, without sacrificing procedural fairness or bringing about other undesirable results.” Fed. R. Civ. P. 23(b)(3), *adv. comm. n. to 1966 amend.* Here, class certification would achieve substantial economies of time and expense by providing Class Members a unified approach to litigate a uniform course of

conduct by co-conspirators that, while generating massive losses for the Classes as a whole, would, in most cases, result in damages too small to litigate individually.

1. Common Questions of Collusion, Impact, and Damages Predominate

“The predominance inquiry ‘asks whether the common, aggregation-enabling, issues in the case are more prevalent or important than the non-common, aggregation-defeating, individual issues.’” *Tyson Foods, Inc. v. Bouaphakeo*, 136 S. Ct. 1036, 1045 (2016) (quoting W. Rubenstein, *NEWBERG ON CLASS ACTIONS* §4:49, at 195-96 (5th ed. 2012)). Predominance is satisfied “‘if resolution of some of the legal or factual questions that qualify each class member’s case as a genuine controversy can be achieved through generalized proof, and if these particular issues are more substantial than the issues subject only to individualized proof.’” *In re U.S. Foodservice Inc. Pricing Litig.*, 729 F.3d 108, 118 (2d Cir. 2013). A plaintiff does not have “‘to prove that each element of her claim is susceptible to classwide proof,’” but rather, a plaintiff need only show “‘that common questions *predominate* over any questions affecting only individual [class] members.’” *Petrobras*, 862 F.3d at 268 (quoting *Amgen Inc.*, 568 U.S. 455) (emphasis in original).

The Supreme Court has recognized that common questions still predominate even when some individualized questions may need to be tried separately, such as damages or affirmative defenses specific to some class members. *See Tyson Foods*, 136 S. Ct. at 1045 (quoting Wright, Miller, & Kane, *FEDERAL PRACTICE AND PROCEDURE* §1778 at 123-24 (3d ed. 2005)); *Roach v. T.L. Cannon Corp.*, 778 F.3d 401, 405 (2d Cir. 2015) (collecting cases) (“‘the fact that damages may have to be ascertained on an individual basis is not sufficient to defeat class certification’ under Rule 23(b)(3).”). Thus, the presence of some individualized damages issues does not defeat class certification when common liability issues predominate. *Sykes v. Mel S. Harris and Assocs. LLC*, 780 F.3d 70, 81 (2d Cir. 2015) (“The Supreme Court has explicitly determined that

it is ‘clear that individualized monetary claims belong in Rule 23(b)(3).’”) (quoting *Dukes*, 131 S. Ct. at 2558).

Predominance is “‘a test readily met in certain cases alleging . . . violations of the antitrust laws.’” *Cordes*, 502 F.3d at 105 (citing *Amchem Prods., Inc. v. Windsor*, 521 U.S. 591, 625 (1997)); *Elec. Books*, 2014 WL 1282293, at *14 (“‘where plaintiffs were allegedly aggrieved by a single policy of the defendant[], and there is a strong commonality of the violation and the harm, this is precisely the type of situation for which the class action device is suited’”) (quoting *Brown*, 609 F.3d at 484). Put another way, a proposed class with common questions of law and fact will satisfy the predominance requirement “unless it is clear that individual issues will overwhelm the common questions.” *In re Playmobil Antitrust Litig.*, 35 F. Supp. 2d 231, 245 (E.D.N.Y. 1998).

Here, each element of the Classes’ antitrust claims – collusion, causation and impact, and damages – would be proven through common evidence.

a. Defendants’ Agreement to Fix FX Prices Will Be Proven Through Common Evidence

The existence and scope of Defendants’ conspiracy to fix foreign exchange rates will be established by common evidence. Courts in this district have readily found that “the existence of a conspiracy is a common question.” *LIBOR*, 2018 WL 1229761, at *115; see *In re Vitamin C Antitrust Litig.*, 279 F.R.D. 90, 109 (E.D.N.Y. 2012) (stating that in price-fixing conspiracy cases, “courts have frequently held that the predominance requirement is satisfied because the existence and effect of the conspiracy are the prime issues in the case and are common across the class”) (citing cases); *In re IMAX Secs. Litig.*, 283 F.R.D. 178, 187 (S.D.N.Y. 2012) (“As the Supreme Court has observed, the requirement of predominance is ‘readily met in certain cases alleging . . . violations of the antitrust laws.’”) (quoting *Amchem*, 521 U.S. at 625); *NASDAQ*

Market-Makers, 169 F.R.D. at 518 (“Courts repeatedly have held that the existence of a conspiracy is the predominant issue in price fixing cases, warranting certification of the class even where significant individual issues are present.”). Allegations of price fixing “will focus on the actions of the defendants, and, as such, proof for these issues will not vary among class members.” *In re Vitamins Antitrust Litig.*, 209 F.R.D. 251, 264 (D.D.C. 2002).

Here, trial will be dominated by Plaintiffs’ proof of a conspiracy among Defendants, including Credit Suisse, to fix prices for foreign exchange. Plaintiffs will present evidence demonstrating that Defendants’ FX traders agreed to fix prices in a dynamic financial market through a persistent, systematic, and interconnected conspiracy. This evidence will show that Credit Suisse traders, acting on behalf of Credit Suisse and for the benefit of Credit Suisse, joined this horizontal price-fixing conspiracy. Plaintiffs have identified and developed a detailed record of common evidence that will be used at trial to prove the existence of the conspiracy, including:

- the guilty pleas of six Defendant banks and two FX traders to antitrust violations;
- Credit Suisse’s Consent Order and other governmental findings;
- Defendants’ documents, including thousands of chat room communications;
- the testimony of Defendants’ current and former employees;
- Defendants’ transactional data; and
- expert testimony involving industry conventions, terminology, market structure, impact, and damages.

Plaintiffs will use common evidence to prove that the illegal conduct stemmed from “an agreement, tacit or express” rather than individualized decision-making. *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 553 (2007). Chat room communications showing Credit Suisse had a “conscious commitment to a common scheme” necessary for a Section 1 violation are common

to all Class Members. *Anderson News, L.L.C. v. Am. Media, Inc.*, 680 F.3d 162, 184 (2d Cir. 2012). This proof will show that the common scheme constituted “a price-fixing conspiracy among horizontal competitors, a per se violation of antitrust laws.” *See In re Foreign Exchange Benchmark Rates Antitrust Litig.*, 74 F. Supp. 3d 581, 592 (S.D.N.Y. 2015) (denying motion to dismiss). And, as the quantity and quality of the common evidence set forth in this memorandum’s statement of facts shows, Credit Suisse was as committed to the conspiracy as the Defendants who have pleaded guilty.

Critically, none of this proof will vary by Class Member. Class Plaintiffs will demonstrate a single conspiracy existed which had the effect of fixing FX prices for both Classes. They will not need to demonstrate, for example, that the spread on any particular Class Member’s trade was widened. The evidence of a horizontal price-fixing conspiracy, a *per se* violation of the Sherman Act, is common to all Class Members and predominates over any individual issues.

b. Class-wide Impact and Causation Will Be Demonstrated Through Common Evidence

At the class certification stage, Plaintiffs need only establish that impact is “capable of proof at trial through evidence that [is] common to the class rather than individual to its members.” *See Comcast Corp. v. Behrend*, 569 U.S. 27, 30 (2013). Impact, or “fact of injury,” is demonstrated by establishing that common evidence exists to show that class members suffered damage on at least one transaction. *See LIBOR*, 2018 WL 1229761, at *119 (finding “the question of whether each class member has experienced injury as a result of the alleged 16-bank conspiracy is a common one”). At the class-certification stage, class members “must only demonstrate that any such ‘impact is capable of proof at trial through evidence that is common to

the class rather than individual to its members.” *Air Cargo Shipping*, 2014 WL 7882100, at *41 (quoting *In re Hydrogen Peroxide Antitrust Litig.*, 552 F.3d 305, 311-12 (3d Cir. 2009)).

Where expert testimony is used to demonstrate that impact is capable of proof through common evidence, “expert testimony need not shoulder the plaintiffs’ burden alone [and] should be viewed in conjunction with the plaintiff’s other evidence.” *Air Cargo Shipping*, 2014 WL 7882100, at *43. At class certification, courts consider whether the plaintiff’s expert testimony is evidence that is: (1) common to the class; (2) methodologically capable of addressing the question it seeks to answer; and (3) substantially probative of the issue, enough so that a reasonable fact-finder could rely on it in part to resolve the case on the merits. *Id.*

As demonstrated through their experts Profs. Bjønnes and Ljungqvist, Plaintiffs will present common proof that due to Defendants’ persistent and systematic sharing of sensitive competitive information “all or virtually all Class Members were impacted” because all or nearly all Class Members “suffered increased transaction costs on at least one of their trades during the class period.”¹¹⁸ See *In re Nexium Antitrust Litig.*, 777 F. 3d 9, 25 (1st Cir. 2015) (without deciding whether a class can include “more than a de minimis number of uninjured parties,” certifying class because “it has not been shown that the class here includes more than a de minimis number of uninjured parties”); see also *Tyson Foods*, 136 S. Ct. at 1044-45 (affirming certification despite presence of 212 uninjured members, representing 6.33% of class).

Plaintiffs will be able to establish both the existence and extent of antitrust injury for each Class Member using common evidence. Profs. Bjønnes and Ljungqvist’s preliminary analysis estimates that 99.7% of OTC Class Members were injured on at least one trade;¹¹⁹ that is, virtually all Class Members at one point paid a higher price to buy FX or received a lower price

¹¹⁸ Bjønnes-Ljungqvist Report, ¶¶29, 80.

¹¹⁹ *Id.*, ¶144.

to sell FX than they would have in the absence of Defendants' conspiracy. To derive this estimate, their model relies on data produced by Defendants and third parties, which is common to all members of the respective Classes and requires no individualized inquiries.

As Profs. Bjønnes and Ljungqvist further explain, the class-wide impact figure does not depend on evidence of an explicit agreement to fix spreads on every trade.¹²⁰ Rather, their report supports the conclusion that Defendants' conspiracy to fix prices and acts in furtherance of their agreement widened spreads market-wide.¹²¹ Defendants' persistent sharing of sensitive competitive information in furtherance of their agreement increased market-wide information asymmetry and thus the adverse selection risks faced by all other market participants outside of the conspiracy. This caused spreads on anonymous ECNs such as EBS and Reuters to widen.¹²² The widening of those reference spreads, in turn, led to a sustained widening of spreads throughout the FX market without regard to venue, instrument, or order type.¹²³

Plaintiffs' proof of injury includes data, documentary evidence, and witness testimony showing that Defendants:

- agreed to widen spreads regularly during the Class Period;
- worked together to exploit shared sensitive competitive information on a persistent, systematic, and interconnected basis regularly during the class period;
- understood and enforced their conspiracy to fix prices continually throughout the Class Period.

¹²⁰ *Id.*, ¶¶80, 144.

¹²¹ *See id.*, ¶86.

¹²² *See id.*, ¶86.

¹²³ *See id.*, ¶88. Dr. Singer tested econometrically for differences between bid-ask spreads quoted on "EBS," an interdealer electronic trading platform, before and after the Class Period. Singer Report, ¶¶39-48. He found EBS spreads narrowed after the Class Period. *Id.*, ¶40. Dr. Singer also demonstrated econometrically that EBS prices are highly predictive of prices paid by individual Class Members. *Id.*, ¶¶40, 49-56. Given that EBS prices are highly predictive of Class Members' prices and given that the challenged conduct is associated with higher EBS spreads, one can infer that Class Members were worse off during the Class Period versus after it.

Using transaction data provided by Defendants and EBS/Reuters, Profs. Bjønnes and Ljungqvist compare prices customers actually paid for FX instruments during the Class Period to a but-for price they would have paid absent collusion. They use TCA, an analysis widely used by academic financial economists and financial regulators to analyze transaction costs in financial markets.¹²⁴

Profs. Bjønnes and Ljungqvist apply TCA to calculate the “but-for” effective price using transaction records from a “clean period.”¹²⁵ The clean period is after myriad Defendant banks had prohibited FX traders from participating in multibank chat rooms, government investigations had begun, and the Defendant banks suspended or terminated numerous of their FX traders. The experts used two clean periods: (1) January 1, 2014 to December 31, 2015; and (2) January 1, 2015 to December 31, 2015.¹²⁶

Profs. Bjønnes and Ljungqvist use regression analysis, a technique widely accepted by economists, and statisticians, among others, to estimate the contribution to transaction costs during the clean period of multiple control variables drawn from the academic literature and their professional research.¹²⁷ These control variables include, but are not limited to, order characteristics, market conditions, and customer characteristics. They find the coefficients on these variables, with a few exceptions, to be highly statistically significant. *See id.*, Appendix E.

¹²⁴ *See id.*, ¶¶104, 156.

¹²⁵ Bjønnes-Ljungqvist Report, ¶103.

¹²⁶ *See id.*, ¶103. Using two clean periods provides a measure of robustness. It shows the differences between the Class Period and clean periods are greater in the 2015 clean period than in the 2014 to 2015 clean period. Antitrust and market microstructure economists would have expected that even if the conduct stopped by late 2013, the market would have taken several months to “correct” and start to reflect more competitive prices, or to put it another way, before other market participants understood they faced less adverse selection risk.

¹²⁷ *See id.*, ¶122.

Profs. Bjønnes and Ljungqvist then apply the clean-period coefficient estimates to transactions during the Class Period to calculate the but-for effective cost for each transaction.¹²⁸ This step ensures an apples-to-apples comparison, by allowing Class Period transactions to differ in their but for effective costs depending on their various characteristics.¹²⁹ The difference between the actual effective cost and the but-for effective cost is the measure of damages on a particular trade.

Profs. Bjønnes and Ljungqvist are able to use the trade-specific damage calculation to determine total damages across all trades for each Class Member, and are able to then calculate aggregate class-wide damages by aggregating the sum of all Class Members' damages.¹³⁰

Using this bottom-up approach, Profs. Bjønnes and Ljungqvist also measure class-wide impact by determining the proportion of Class Members who suffered damage on at least one trade. Using their model to make preliminary calculations on the current version of the trade database,¹³¹ the experts have estimated that over 99% of all members of the OTC Class suffered injury on at least one of their trades during the Class Period.¹³² This finding is consistent with the alleged presence of collusive conduct.¹³³

Profs. Bjønnes and Ljungqvist explain that a similar methodology can be used to establish injury suffered by members of the Exchange Class, once they obtain futures transaction

¹²⁸ See *id.*, ¶¶113, 156.

¹²⁹ *Id.*, ¶28.

¹³⁰ See *id.*, ¶¶28, 152.

¹³¹ Plaintiffs and their experts have gone to great lengths and expense to construct an extraordinarily large data set consisting of transactions data from 12 of the 16 Defendant banks. The transaction data of Standard Chartered and Société Générale were submitted too late (in December, 2017) for use by Plaintiffs' experts at this stage of the litigation. In addition, the transaction data for UBS and BNP could not be used due to how the data currently reports the trade rate and missing time stamps, respectively. See, *generally*, Expert Report of Robin Poynder (Bank Data), ¶¶267, 268, 271, 108.

¹³² Bjønnes-Ljungqvist Report, ¶144.

¹³³ *Id.*, ¶149.

data which Defendants do not maintain, but which are available from the CME.¹³⁴ Based on the characteristics of exchange-traded instruments and the ways they are traded, the model they employ would be equally applicable to members of the Exchange Class.

The report describes how its model excludes the presence of multiple non-collusive factors by using them as independent variables (thus, “controlling for them”) in regressions to determine effective trade costs during the “clean period.” That the coefficients on these factors were overwhelmingly statistically significant supports their presence in the model.

Plaintiffs must also demonstrate “antitrust injury,” whether the injury is ““of the type the antitrust laws were intended to prevent and that flows from that which makes defendants’ acts unlawful.”” *Cordes*, 502 F.3d at 106 (quoting *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 489 (1977)). Antitrust injury is demonstrated where plaintiffs show they paid overcharges due to a horizontal price-fixing conspiracy, a question which the Second Circuit has held is undoubtedly a common one. *Cordes*, 502 F.3d at 107; *Nexium*, 777 F.3d at 27 (“antitrust injury occurs the moment the purchaser incurs an overcharge, whether or not that injury is later offset”). This Court found that Plaintiffs sufficiently alleged antitrust injury because they paid “supra-competitive prices as a result of the defendants’ anticompetitive conduct.” ECF No. 661 at 11 (quoting *In re DDAVP Direct Purchaser Antitrust Litig.*, 585 F.3d 677, 688 (2d Cir. 2009)). The methodology described in the Experts’ report employs regression analyses to differentiate effects on transaction pricing stemming from antitrust injury (*i.e.*, damages stemming from collusion) and effects driven by other factors like ordinary market volatility.

¹³⁴ Lead Counsel is in negotiations with the CME for it to release anonymized transactions data covering most of the Class Period, and one or two years after that.

**c. Damages to Class Members Will Be Demonstrated Using
Formulae that Are Common to Class Members**

At the class certification stage, “all that is required . . . is that plaintiffs must be able to show that their damages stemmed from the defendant’s actions that created the legal liability.” *Goldemberg v. Johnson & Johnson Consumer Cos., Inc.*, 317 F.R.D. 374, 393 (S.D.N.Y. 2016). “The Supreme Court’s decision in *Comcast* requires ‘only that courts should examine the proposed damages methodology at the certification stage to ensure it is consistent with the classwide theory of liability and capable of measurement on a class wide basis.’” *Goldemberg*, 317 F.R.D. 374 (quoting *In re Scotts EZ Seed Litig.*, 304 F.R.D. 397, 414 (S.D.N.Y. 2015)) (additional citations omitted).

In a price-fixing conspiracy, damages are measured as “the difference between the prices actually paid and the prices that would have been paid absent the conspiracy.” *Elec. Books*, 2014 WL 1282293, at *16 (quoting *New York v. Hendrickson Bros., Inc.*, 840 F.2d 1065, 1077 (2d Cir. 1988)). Establishing such damages by formula is consistently accepted. *See, e.g., Roach*, 778 F.3d at 407. It is also standard economic practice in antitrust cases to utilize, as Profs. Bjønnes and Ljungqvist do, a “but-for world” comparison evaluating prices during the conspiracy compared to a benchmark non-collusive period. *Elec. Books*, 2014 WL 1282293, at *25 (collecting cases and noting the “before and after” method, . . . is a well accepted method of measuring antitrust damages). And in estimating damages from the “bottom up,” on a transaction-specific basis, the experts here have done precisely what this Court accepted in *Elec. Books*, 2014 WL 1282293, at *23 (“In this case, by contrast, Noll’s damages model produces *individualized* damage estimates based on individual transaction records. Apple will not be made to pay some ‘rough estimate’ of damages; rather, it will pay to each injured claimant a conservatively calculated amount equal to damages due that claimant. Consequently, plaintiffs

have established that common issues in this litigation will predominate over any individualized ones.”) (emphasis in original).¹³⁵

In the antitrust context, not only is the use of a formula to measure damages consistent with a finding of predominance for class certification, but the formula used to evaluate damages “need not be exact.” *See Comcast*, 569 U.S. at 35. In price-fixing cases, “[w]here the but-for price is uncertain ‘the plaintiff’s burden of proving damages is, to an extent, lightened.’” *Elec. Books*, 2014 WL 1282293, at *16 (quoting *Hendrickson Bros.*, 840 F.2d at 1077). Courts have “expressly refuse[d] to impose extraordinary burdens on a plaintiff to construct the but-for price.” *Id.*

As described above, the experts’ model for calculating trade-specific damages relies on common formulae. The key model inputs for the OTC class damages analysis are Defendants’ trade data produced in this litigation (for spot, forward, and swaps transactions conducted OTC), which includes trades executed with class members, and broader market trade data produced by leading ECNs, Reuters and EBS. The data fields within these datasets identify the specific market conditions and counterparty characteristics of each trade, and thus allow the experts to incorporate those individual characteristics into their analysis without resorting to individual evidence. As noted earlier, Lead Counsel is working with the CME to obtain futures transaction data to serve as inputs, along with various control variables, into the experts’ model for estimating damages to the Exchange Class.

The experts’ model goes beyond the requirement of estimating damages, by producing trade-specific and aggregate damages figures for each OTC Class Member through common

¹³⁵ *See also Nexium*, 777 F.3d at 21 (explaining that *Comcast* “simply” requires that a damages calculation reflect the associated theory of liability, and discussing the “well-established” principle that individualized damages do not automatically defeat Rule 23(b)(3) certification).

formulae that are equally applicable to all Class Members. To calculate a Class Member's damage, the experts apply their model to each trade, and aggregate the trade-by-trade damages per Class Member, and then on a class-wide basis to determine a class-wide figure of damages.¹³⁶

2. Class Treatment Is a Superior Method to Resolve the Disputes

If common issues predominate over individual issues, then a class action will generally be a superior method for adjudicating the class members' claims. *See Amchem*, 521 U.S. at 615. The superiority inquiry examines: "(A) the class members' interests in individually controlling the prosecution or defense of separate actions; (B) the extent and nature of any litigation concerning the controversy already begun by or against class members; (C) the desirability or undesirability of concentrating the litigation of the claims in the particular forum; and (D) the likely difficulties in managing a class action." Fed. R. Civ. P. 23(b)(3).

A case satisfies the superiority test if "the class device will achieve economies of scale, conserve judicial resources, preserve public confidence in the integrity of the judicial system by avoiding the waste and delay of repetitive proceedings, and prevent inconsistent adjudications of similar claims." *Chhab v. Darden Rests., Inc.*, No. 11 Civ. 8345 (NRB), 2016 WL 3004511, at *3 (S.D.N.Y. May 20, 2016) (quoting *Gonqueh v. Leros Point to Point, Inc.*, No. 14-CV-5883 (GHW), 2015 WL 9256932, at *3 (S.D.N.Y. Sept. 2, 2015)). Superiority is "explicitly comparative in nature: courts must ask whether 'a class action is **superior to other available methods** for fairly and efficiently adjudicating the controversy.'" *Petrobras*, 862 F.3d at 268 (quoting Fed. R. Civ. P. 23(b) (emphasis in original)).

¹³⁶ After completion of the analysis of Class Member trades, there may be some Class Members with negative net damages. These Class Members may or may not be entitled to a recovery.

Class litigation is superior in actions where, as here, it would be unduly costly for Class Members to pursue litigation on their own. *See Elec. Books*, 2014 WL 1282293, at *23 (citing *Amchem*, 521 U.S. at 617); *Carnegie v. Household Int'l, Inc.*, 376 F.3d 656, 661 (7th Cir. 2004) (“The *realistic* alternative to a class action is not 17 million individual suits, but zero individual suits, as only a lunatic or a fanatic sues for \$30.”) (emphasis in original). Gathering, cleaning, and analyzing the data required to prosecute this litigation has been time-consuming and costly for Class Plaintiffs, and the costs for class members to build a similar database to effectively pursue individual litigation would likely outweigh any potential individual recovery. *See* ECF No. 938 at 6-7; *Currency Conversion*, 264 F.R.D. at 117 (class litigation was superior where “class members’ claims will be small relative to the high costs of maintaining an antitrust action”). Given the expense of documentary and data discovery and the extraordinary complexity of the data involved in this action, there is *no* realistic alternative to a class action for all but a few Class Members here.

Permitting the Classes to pursue this case as a consolidated action will promote judicial economy and uniformity of decision. *See U.S. Foodservice*, 729 F.3d at 130-31 (stating that “substituting a single class action for numerous trials in a matter involving substantial common legal issues and factual issues susceptible to generalized proof will achieve significant economies of ‘time, effort and expense, and promote uniformity of decision’”). It is most efficient to concentrate the Classes’ claims where the claims of thousands of class members can be adjudicated in a single forum. Further, although there is a broad range of potential recoveries for class members depending on their notional trading volume, the cost of maintaining an individual action would be economically feasible only for the largest of class members. *See Elec. Books*, 2014 WL 1282293, at *23 (citing *Amchem*, 521 U.S. at 617).

While this is a large antitrust action, there are no unmanageable difficulties that would preclude a trial in this matter. *See Sykes*, 780 F. 3d at 82 (“manageability is, by the far, the most critical concern in determining whether a class action is a superior means of adjudication.”) (quoting 2 William B. Rubenstein, *NEWBERG ON CLASS ACTIONS* 4.72 (5th ed. West 2014)). Any manageability concerns that arise through the pendency of the litigation can be addressed through a variety of case-management tools. *See In re Visa Check MasterMoney Antitrust Litig.*, 280 F.3d 124, 141 (2d Cir. 2001) (listing management tools including bifurcation and subclasses). For these reasons, a class action is superior to any alternative method for adjudicating Plaintiffs’ claims.

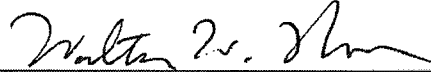
IV. CONCLUSION

For the foregoing reasons, Plaintiffs respectfully request that the Court grant this Motion.

Dated: May 31, 2018

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on March 1, 2019, I caused the foregoing to be electronically filed with the Clerk of the Court using the CM/ECF system, which will send notification of such filing to the email addresses denoted on the Electronic Mail Notice List.

Dated: March 1, 2019

SCOTT+SCOTT ATTORNEYS AT LAW LLP

s/ Christopher M. Burke
Christopher M. Burke

APPENDIX A

CLASS DEFINITIONS AND AFFECTED CURRENCY PAIRS

I. Class Definition

OTC Class: All persons who, between December 1, 2007 and December 31, 2013 (inclusive) entered into a total of 10 or more FX spot, forward, and/or FX swap trades directly with one or more Defendants in the 52 Affected Currency Pairs, where such persons were either domiciled in the United States or its territories or, if domiciled outside the United States or its territories, traded in the United States or its territories.

Exchange Class: All persons who, between December 1, 2007 and December 31, 2013 (inclusive) entered into a total of 10 or more trades of FX futures contracts on a U.S. exchange.

Exclusions from Both Classes: Excluded from the Classes are the Defendants and their parents, subsidiaries, and affiliates, directors, and employees. Excluded from these Classes are any judicial officer presiding over this action and the members of his/her immediate family and judicial staff, and any juror assigned to this action. Finally, trades whose prices were set on the basis of benchmark rates, such as the WM/Reuters FX closing spot rates or the ECB reference rates are excluded.

II. Affected Currency Pairs (in alphabetical order)

	CURRENCY PAIR (SYMBOLS)	CURRENCY PAIR
1	AUD/CAD	Australia Dollar/Canada Dollar
2	AUD/JPY	Australia Dollar/Japan Yen
3	AUD/NZD	Australia Dollar/New Zealand Dollar
4	AUD/USD	Australia Dollar/United States Dollar
5	CAD/CHF	Canada Dollar/Switzerland Franc
6	CAD/JPY	Canada Dollar/Japan Yen
7	CHF/JPY	Switzerland Franc/Japan Yen
8	EUR/AUD	Euro/Australia Dollar
9	EUR/CAD	Euro/Canada Dollar
10	EUR/CHF	Euro/Switzerland Franc
11	EUR/CZK	Euro/Czech Republic Koruna
12	EUR/DKK	Euro/Denmark Krone
13	EUR/GBP	Euro/Great Britain Pound
14	EUR/HUF	Euro/Hungary Forint
15	EUR/ILS	Euro/Israel Shekel
16	EUR/JPY	Euro/Japan Yen

	CURRENCY PAIR (SYMBOLS)	CURRENCY PAIR
17	EUR/NOK	Euro/ Norway Kroner
18	EUR/NZD	Euro/New Zealand Dollar
19	EUR/PLN	Euro/Poland Zloty
20	EUR/RON	Euro/Romania Leu
21	EUR/RUB	Euro/Russia Ruble
22	EUR/SEK	Euro/ Sweden Krona
23	EUR/TRY	Euro/Turkey Lira
24	EUR/USD	Euro/United States Dollar
25	EUR/ZAR	Euro/South Africa Rand
26	GBP/AUD	Great Britain Pound/Australia Dollar
27	GBP/CAD	Great Britain Pound/Canada Dollar
28	GBP/CHF	Great Britain Pound/Switzerland Franc
29	GBP/JPY	Great Britain Pound/Japan Yen
30	GBP/NZD	Great Britain Pound/New Zealand Dollar
31	GBP/USD	Great Britain Pound/United States Dollar
32	NZD/JPY	New Zealand Dollar/Japan Yen
33	NZD/USD	New Zealand Dollar/United States Dollar
34	USD/CAD	United States Dollar/Canada Dollar
35	USD/CHF	United States Dollar/Switzerland Franc
36	USD/CNH	United States Dollar/China Yuan
37	USD/CZK	United States Dollar/Czech Republic Koruna
38	USD/DKK	United States Dollar/ Denmark Krone
39	USD/HKD	United States Dollar/Hong Kong Dollar
40	USD/HUF	United States Dollar/Hungary Forint
41	USD/ILS	United States Dollar/Israel Shekel
42	USD/INR	United States Dollar/India Rupee
43	USD/JPY	United States Dollar/Japan Yen
44	USD/MXN	United States Dollar/Mexico Peso
45	USD/NOK	United States Dollar/ Norway Kroner
46	USD/PLN	United States Dollar/Poland Zloty
47	USD/RON	United States Dollar/Romania Leu
48	USD/RUB	United States Dollar/Russia Ruble
49	USD/SEK	United States Dollar/Sweden Kroner
50	USD/SGD	United States Dollar/Singapore Dollar
51	USD/TRY	United States Dollar/Turkey Lira
52	USD/ZAR	United States Dollar/South Africa Rand

Appendix B: FX Cast of Characters

<u>Last</u>	<u>First</u>	<u>Bank</u>	<u>Title</u>
██████	██████	JPMorgan (2006-2015)	██
██████	██████	Bank of America (2002-2007)	██
		Credit Suisse (2007-2014)	██
██████	██████	RBS (2003-2012)	██
		JPMorgan (2012-2015)	██
██████	██████	UBS (2001-2005)	██
		Barclays (2006-2013)	██ ██
██████	██████	JPMorgan (1993-2001)	██
		Goldman Sachs (2001-2013)	██
██████	██████	Barclays (2005-2010)	██
		HSBC (2010-2012)	██
		Goldman Sachs (2012-2014)	██
██████	██████	RBS (2004-2009)	██
		Morgan Stanley (2009-present)	██
██████	██████	Bank of America (2002-2014)	██
██████	██████	Goldman Sachs (2003-2011)	██
		Bank of America (2011-2016)	██
██████	██████	Citi (1998-2014)	██
██████	██████	Barclays Capital (2005-2009)	██
		BNP Paribas (2009-2010)	██
		RBS (2010-2014)	██
██████	██████	Credit Suisse (1996-2003)	██
		Deutsche Bank (2006-2010)	██
		Societe Generale (2010-2012)	██
██████	██████	Barclays (2002-2012)	██
		Credit Suisse (2012-2013)	██
██████	██████	RBC (2009-2012)	██
██████	██████	Citi (~2005-present)	██
██████	██████	Barclays (2007-2011)	██
		UBS (2011-2013)	██
		Standard Chartered (2013-2014)	██

Appendix B: FX Cast of Characters

<u>Last</u>	<u>First</u>	<u>Bank</u>	<u>Title</u>
[REDACTED]	[REDACTED]	RBS (2009-2013)	[REDACTED]
		Barclays (2013-2014)	[REDACTED]
[REDACTED]	[REDACTED]	Bank of Tokyo-Mitsubishi (2008-2011)	[REDACTED]
[REDACTED]	[REDACTED]	Bank of America (2007-2013)	[REDACTED]
		Barclays (2013-2015)	[REDACTED]
[REDACTED]	[REDACTED]	Deutsche Bank (2003-2005)	[REDACTED]
		HSBC (2005-2011)	[REDACTED]
		Credit Suisse (2011-present)	[REDACTED]
[REDACTED]	[REDACTED]	Standard Chartered (2001-2010)	[REDACTED]
		Barclays (2010-2011)	[REDACTED]
[REDACTED]	[REDACTED]	Barclays (2004-2015)	[REDACTED]
[REDACTED]	[REDACTED]	Deutsche Bank (2006-2011)	[REDACTED]
		Standard Chartered (2011-2015)	[REDACTED]
[REDACTED]	[REDACTED]	Deutsche Bank (1999-2012)	[REDACTED]
[REDACTED]	[REDACTED]	JPMorgan (1998-2017)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (2008-2012)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (2004-2008)	[REDACTED]
		Toronto Dominion (2008-2009)	[REDACTED]
		Bank of America (2009-2011)	[REDACTED]
		Credit Suisse (2011-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (1995-2008)	[REDACTED]
		Bank of America/Merrill Lynch (2008-2012)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (2005-2010)	[REDACTED]
		Barclays (2010-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Deutsche Bank (at least 2007-2016)	[REDACTED]
[REDACTED]	[REDACTED]	Standard Chartered (1993-present)	[REDACTED]
[REDACTED]	[REDACTED]	RBS (2002-2009)	[REDACTED]
		Standard Chartered (2009-2010)	[REDACTED]
		Credit Suisse (2010-2011)	[REDACTED]
		BNP Paribas (2011-2016)	[REDACTED]

Appendix B: FX Cast of Characters

<u>Last</u>	<u>First</u>	<u>Bank</u>	<u>Title</u>
[REDACTED]	[REDACTED]	RBS (1985-2015)	[REDACTED]
[REDACTED]	[REDACTED]	RBS (2006-2014)	[REDACTED]
[REDACTED]	[REDACTED]	Morgan Stanley (2004-2011)	[REDACTED]
[REDACTED]	[REDACTED]	Bank of America (2001-2009)	[REDACTED]
		Credit Suisse (2009-2016)	[REDACTED]
		Morgan Stanley (2017-present)	[REDACTED]
[REDACTED]	[REDACTED]	UBS (1994-2015)	[REDACTED]
[REDACTED]	[REDACTED]	Goldman Sachs (2002-2014)	[REDACTED]
			[REDACTED]
[REDACTED]	[REDACTED]	Morgan Stanley (2004-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (2006-2010)	[REDACTED]
		Morgan Stanley (2010-2011)	[REDACTED]
		HSBC (2012-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Citi (2001-2014)	[REDACTED]
			[REDACTED]
[REDACTED]	[REDACTED]	Barclays (2008-2010)	[REDACTED]
		Credit Suisse (2010-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (2008-2010)	[REDACTED]
		UBS (2011-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Bank of Tokyo-Mitsubishi (2000-2011)	[REDACTED]
		Citi (2011-2013)	[REDACTED]
[REDACTED]	[REDACTED]	Credit Suisse (1993-2010)	[REDACTED]
		RBC (2010)	[REDACTED]
		Merrill Lynch (2011-2015)	[REDACTED]
[REDACTED]	[REDACTED]	Deutsche Bank (2005-2008)	[REDACTED]
		Citi (2008-2009)	[REDACTED]
		Morgan Stanley (2009-2014)	[REDACTED]
[REDACTED]	[REDACTED]	JPMorgan (2007-2015)	[REDACTED]
[REDACTED]	[REDACTED]	RBS (2004-2010)	[REDACTED]
		JPMorgan (2010-2014)	[REDACTED]

Appendix B: FX Cast of Characters

<u>Last</u>	<u>First</u>	<u>Bank</u>	<u>Title</u>
████	████	UBS (1995-2015)(2017-present)	████████████████████
████	████	Bank of America (2003-2007)	████████████████████
		Credit Suisse (2007-2014)	████████████████████
		Morgan Stanley (2014-present)	████████████████████
████	████	Credit Suisse (1997-2009)	████████████████████
		Societe Generale (2009-present)	████████████████████
████	████	Credit Suisse (at least 2007-2012)	████████████████████
████	████	Barclays (2003-2011)	████████████████████
		Credit Suisse (2011-2014)	████████████████████
		Citi (2014-2016)	████████████████████
████	████	RBS (1996-2012)	████████████████████
████	████	Credit Suisse (1993-2011)	████████████████████

APPENDIX C

SUMMARY OF FORMER EMPLOYEES TERMINATED, SUSPENDED BY DEFENDANTS AND/OR SANCTIONED BY REGULATORY AGENCIES				
EMPLOYEE	BANK	TITLE	NOTES	DATE REPORTED
[REDACTED]	Bank of America	[REDACTED]	Suspended	Mar. 6, 2014
[REDACTED]	Barclays	[REDACTED]	Indicted	Oct. 1, 2017
			Suspended by Barclays	Nov. 1, 2013
			Fined \$1.2 million and banned from working in the banking industry by the Federal Reserve	May 19, 2017
[REDACTED]	Barclays	[REDACTED]	Indicted	Jan. 16, 2018
[REDACTED]	Barclays	[REDACTED]	Terminated	Nov. 1, 2013
[REDACTED]	Barclays	[REDACTED]	Terminated	Nov. 1, 2013
[REDACTED]	Barclays	[REDACTED]	Terminated	Nov. 1, 2013
[REDACTED]	Barclays	[REDACTED]	Banned from working in the banking industry by the Federal Reserve	July 24, 2017
[REDACTED]	Barclays	[REDACTED]	Fined \$487,500 and banned from working in the banking industry by the Federal Reserve	Feb. 16, 2018
[REDACTED]	Barclays	[REDACTED]	Terminated	May 8, 2015
[REDACTED]	Barclays	[REDACTED]	Terminated	May 20, 2015
[REDACTED]	BNP Paribas	[REDACTED]	Suspended	Mar. 6, 2014
[REDACTED]	BNP Paribas	[REDACTED]	Pleaded guilty	Dec. 29, 2016
			Banned from working in the banking industry by the Federal Reserve	Jan. 4, 2017
			Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017

SUMMARY OF FORMER EMPLOYEES TERMINATED, SUSPENDED BY DEFENDANTS AND/OR SANCTIONED BY REGULATORY AGENCIES				
EMPLOYEE	BANK	TITLE	NOTES	DATE REPORTED
██████████	BNP Paribas	██████████	Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017
██████████	BNP Paribas	██████████r	Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017
██████████	BNP Paribas	██████████	Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017
██████████	BNP Paribas	██████████	Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017
██████████	BNP Paribas	██████████	Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017
██████████ ██████████	BNP Paribas	██████████	Identified in the NYDFS consent order, which prohibited BNP Paribas from rehiring or retaining the individual in the future	May 24, 2017

SUMMARY OF FORMER EMPLOYEES TERMINATED, SUSPENDED BY DEFENDANTS AND/OR SANCTIONED BY REGULATORY AGENCIES				
EMPLOYEE	BANK	TITLE	NOTES	DATE REPORTED
[REDACTED]	Citi	[REDACTED]	Terminated after being put on leave in October 2013	Jan. 10, 2017
			Indicted	Jan. 10, 2017
			Fined \$5 million and banned from working in the banking industry by the OCC	Jan. 11, 2017
[REDACTED]	Citi	[REDACTED]	Suspended	Jan. 17, 2014
[REDACTED]	Citi	[REDACTED]	Suspended	Jan. 17, 2014
[REDACTED]	Citi	[REDACTED]	Terminated	Dec. 26, 2014
[REDACTED]	Citi	[REDACTED]	Terminated	Nov. 20, 2014
[REDACTED]	Citi	[REDACTED]	Terminated	May 1, 2015
[REDACTED]	Citi	[REDACTED]	Terminated	Nov. 20, 2014
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017

SUMMARY OF FORMER EMPLOYEES TERMINATED, SUSPENDED BY DEFENDANTS AND/OR SANCTIONED BY REGULATORY AGENCIES				
EMPLOYEE	BANK	TITLE	NOTES	DATE REPORTED
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017
[REDACTED]	Credit Suisse	[REDACTED]	Identified in the NYDFS consent order, which prohibited Credit Suisse from rehiring or retaining the individual in the future	Nov. 13, 2017
[REDACTED]	Deutsche Bank	[REDACTED]	Terminated	Feb. 4, 2014
[REDACTED]	Deutsche Bank	[REDACTED]	Terminated	Feb. 4, 2014
[REDACTED]	Deutsche Bank	[REDACTED]	Terminated	Feb. 4, 2014
[REDACTED]	Deutsche Bank	[REDACTED]	Terminated	Feb. 4, 2014
[REDACTED]	Goldman Sachs	[REDACTED]	Suspended	Nov. 18, 2014
[REDACTED]	Goldman Sachs	[REDACTED]	Identified in the NYDFS consent order, which prohibited Goldman Sachs from rehiring or retaining the individual in the future	May 1, 2018
[REDACTED]	HSBC	[REDACTED]	Suspended	Jan. 17, 2014
[REDACTED]	HSBC	[REDACTED]	Suspended	Jan. 17, 2014
[REDACTED]	HSBC	[REDACTED]	Indicted	Aug. 16, 2016
			Banned from working in the banking industry by the Federal Reserve	Oct. 5, 2016

SUMMARY OF FORMER EMPLOYEES TERMINATED, SUSPENDED BY DEFENDANTS AND/OR SANCTIONED BY REGULATORY AGENCIES				
EMPLOYEE	BANK	TITLE	NOTES	DATE REPORTED
[REDACTED]	HSBC	[REDACTED]	Convicted	Oct. 23, 2017
			Banned from working in the banking industry by the Federal Reserve	Oct. 5, 2016
[REDACTED]	JPMorgan	[REDACTED]	Suspended for alleged wrongdoing involving his work at RBS	Jan. 14, 2015
[REDACTED]	JPMorgan	[REDACTED]	Indicted	Jan. 10, 2017
			Fined \$5 million and banned from working in the banking industry by the OCC	Jan. 11, 2017
[REDACTED]	JPMorgan	[REDACTED]	Terminated	June 29, 2015
[REDACTED]	RBS	[REDACTED]	Terminated	Feb. 19, 2015
[REDACTED]	RBS	[REDACTED]	Suspended	Nov. 1, 2013
[REDACTED]	RBS	[REDACTED]	Suspended	Feb. 27, 2015
[REDACTED]	RBS	[REDACTED]	Suspended by RBS	Nov. 1, 2013
			Arrested by Britain's Serious Fraud Office (SFO)	Dec. 19, 2014
[REDACTED]	RBS	[REDACTED]	Suspended	Feb. 27, 2015
[REDACTED]	Standard Chartered	[REDACTED]	Suspended	Oct. 29, 2013
			Banned from working in the banking industry by the Federal Reserve	July 19, 2016
[REDACTED]	UBS	[REDACTED]	Suspended	Mar. 27, 2014

APPENDIX D

EXAMPLE CHAT ROOMS

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
Spot Monkey Inc. PCHAT- 0x00000000000005fa7	[REDACTED] (GS) [REDACTED] (RBS) [REDACTED] (CS) [REDACTED] (RBS)	2/20/2007-3/4/2008	AUD/CAD AUD/GBP AUD/JPY CAD/JPY EUR/AUD EUR/CHF EUR/GBP EUR/JPY EUR/NOK EUR/SEK EUR/USD GBP/SEK GBP/USD NOK/SEK NZD/USD NZD/CHF NZD/JPY USD/CAD USD/JPY USD/NOK USD/SEK USD/MXN USD/NZD	Ex.5 CS-FXLIT-10017196 Ex.17 CS-FXLIT-10020301 Ex.19 GS-FX-CIVIL-02206796 Ex.45 GSFX-CIVIL-02205914 Ex.48 GS-FX-CIVIL_02202980 Ex.49 GS-FX-CIVIL-02202585 Ex.18 GS-FX-CIVIL-02202114

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
The Cartel PCHAT-0x3000001DE65D6	[REDACTED] (Citi) [REDACTED] (JPM) [REDACTED] (JPM) [REDACTED] (Barclays)	10/7/2011-6/3/2013	EUR/USD USD/JPY EUR/CHF EUR/JPY EUR/GBP EUR/AUD	Ex.60 JPMC-CIVIL-0000738740 Ex.80 JPMC-CIVIL-0000706272 Ex.61 BARC-FX-CIV_00055765 Ex.20 UBS_ZINC_CIV_000252087 Ex.42 CITI-FX-CIVIL-00227342
Yen Cartel PCHAT-0x2000001D07609	[REDACTED] (Citi) [REDACTED] (CS) [REDACTED] (BofA) [REDACTED] (JPM) [REDACTED] (GS)	1/26/2012- 3/28/2013	USD/JPY USD/CHF EUR/JPY GBP/JPY EUR/NOK EUR/SEK AUD/NZD	Ex.81 CITI-FX-CIVIL_00240556 Ex.31 CITI-FX-CIVIL_00242725 Ex.82 CITI-FX-CIVIL_00265656
Essex Express PCHAT- 0x2000000CDBAFA	[REDACTED] (Barclays) [REDACTED] (BOTM) [REDACTED] (Barclays) [REDACTED] (UBS) [REDACTED] (RBS)	12/1/2009-8/1/2013	GBP/USD USD/EUR EUR/GBP EUR/JPY GBP/JPY EUR/CHF USD/JPY USD/CHF CHF/JPY AUD/CAD USD/CAD EUR/SEK	Ex.21 UBS_ZINC_CIV_000049605

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
The Sterling Lads PCHAT-0x3000001DDC0D4	[REDACTED] (Barclays, CS) [REDACTED] (Barclays) [REDACTED] (UBS) [REDACTED] (HSBC) [REDACTED] (UBS) [REDACTED] (RBS) [REDACTED] (UBS) [REDACTED] (Barclays)	5/25/2011-8/1/2012	GBP/USD EUR/USD USD/JPY EUR/GBP GBP/CHF	Ex.83 UBS_ZINC_CIV_000088082 Ex.43 CS-FXIT-06033680
Horras PCHAT-0x000000000000104C	[REDACTED] (BofA, RBC) [REDACTED] (Barclays) [REDACTED] (Citi) [REDACTED] (UBS) [REDACTED] (RBC) [REDACTED] (DB) [REDACTED] (DB) [REDACTED] (Barclays) [REDACTED] (UBS)	12/18/2006 - 2/2/2011	USD/AUD EUR/AUD AUD/CAD AUD/JPY GBP/AUD GBP/USD AUD/NZD AUD/CHF USD/CAD EUR/CAD AUD/CAD USD/CHF EUR/CHF EUR/USD EUR/GBP EUR/CAD EUR/AUD EUR/NOK EUR/RUB EUR/CHF USD/GBP EUR/GBP	Ex.84 CITI-FX-CIVIL_00005600 Ex.37 CITI-FX-CIVIL_00006042 Ex.50 CITI-FX-CIVIL_00048727

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
			GBP/AUD GBP/JPY USD/JPY AUD/JPY GBP/JPY USD/KRW USD/MXN EUR/NOK USD/NZD NZD/JPY AUD/NZD GBP/NZD RUB/EUR USD/ZAR	
Slaaagggsssss 2 PCHAT-0x2000001606F1E	[REDACTED] (Barclays) [REDACTED] (HSBC) [REDACTED] (CS, Barclays) [REDACTED] (Barclays, CS) [REDACTED] (RBS) [REDACTED] (Barclays)	7/30/2010-8/1/2012	USD/CHF EUR/USD EUR/GBP EUR/CHF GBP/USD AUD/NZD USD/SGD USD/SEK USD/JPY NOK/SEK	Ex.85 UBS_ZINC_CIV_000098353 Ex.38 UBS_ZIN_CIV_000096807 Ex.39 UBS_ZIN_CIV_000101064 Ex.67 CS-FXLIT-11458581 Ex.56 BARC-FX-CIV_00049812 Ex.86 CS-FXLIT-05063503 Ex.74 CS-FXLIT-06143903
The Real Room PCHAT-0x1000000449311	[REDACTED] (CS) [REDACTED] (RBS, JPM) [REDACTED] (RBS) [REDACTED] (GS) [REDACTED] (DB)	1/13/2009-4/1/2011	EUR/USD USD/CAD USD/ARS USD/ZAR USD/HUF EUR/DKK	Ex.87 GS-FX-CIVIL-02191185

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
			USD/DKK CHF/SEK CHF/JPY CHF/MXN NOK/JPY CAD/JPY CAD/CHF CAD/SEK AUD/NZD AUD/USD AUD/JPY AUD/CHF NZD/NOK NZD/CAD NZD/JPY NZD/USD KRW/USD KRW/JPY ZAR/JPY	

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
RBS Reunion PCHAT-0x30000012B5CA3 PCHAT-0x2000001CF9F06	[REDACTED] (RBS, JPM) [REDACTED] (MS) [REDACTED] (SC) [REDACTED] (BNP) [REDACTED] (CS, BNP) [REDACTED] (RBS) [REDACTED] r (JPM, RBS) [REDACTED] (RBS)	4/28/2010- 11/5/2013	AUD/USD AUD/GBP EUR/AUD EUR/NZD NZD/USD USD/CAD EUR/CAD EUR/CHF GPB/USD EUR/USD EUR/GBP EUR/SEK USD/JPY	Ex.88 AO 005793-DOJ Ex.35 CS-FXLIT-04939163 Ex.73 AO 006090-DOJ
Melvyn Lawes PCHAT-0x10000026978C1	[REDACTED] (CS, BofA) [REDACTED] (GS) [REDACTED] (JPM) [REDACTED] (RBS)	3/31/2011- 9/18/2012	AUD/CAD AUD/CHF AUD/NZD AUD/GBP EUR/AUD EUR/CAD EUR/CHF EUR/DKK GBP/USD EUR/NOK EUR/SEK GBP/CHF GBP/NZD NOK/SEK NZD/USD USD/CAD USD/JPY	Ex.89 GS-FX-CIVIL-01996889 Ex.26 GS-FX-CIVIL-02172971 Ex.68 CS-FXLIT-11484125

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
			USD/SEK	
MD's and their Juniors PCHAT-0x2000001D1680D	[REDACTED] (CS) [REDACTED] (GS) [REDACTED] (JPM) [REDACTED] (RBS)	9/5/2012-2/15/2013	EUR/CHF EUR/SEK NOK/SEK NZD/USD USD/JPY USD/SEK AUD/CAD GBP/USD AUD/USD	Ex.90 GS-FX-CIVIL-02175767
Pete PCHAT-0x10000022E1464	[REDACTED] (CS) [REDACTED] (Barclays)	10/20/2010- 9/20/2012	EUR/USD USD/CHF, EUR/JPY, EUR/USD, AUD/NZD	Ex.23 CS-FXLIT-04236229
Unnamed Chat Room PCHAT-0x20000018E00C1	[REDACTED] (GS) [REDACTED] (GS) [REDACTED] (CS)	9/30/2010-5/2/2012	USD/CHF EUR/CHF USD/JPY EUR/USD	Ex.91 GS-FX-CIVIL-03410451 Ex.24 GS-FX-CIVIL-03410947

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
CAD, CHF, and Stuff PCHAT- 0x00000000000023e67	[REDACTED] (BofA) [REDACTED] o (BofA) [REDACTED] (BofA) [REDACTED] (BofA) [REDACTED] (BNP) [REDACTED] (CS) [REDACTED] (CS) [REDACTED] (CS) [REDACTED] (MS) [REDACTED] (HSBC) [REDACTED] (MS) [REDACTED] (MS) [REDACTED] (MS, BNP) [REDACTED] (RBS)	1/7/2009-4/17/2012	AUD/GBP AUD/JPY AUD/USD EUR/AUD EUR/CHF EUR/GBP EUR/JPY EUR/SEK EUR/USD NOK/SEK NZD/GBP USD/CHF USD/JPY USD/CAD AUD/CAD AUD/JPY	Ex.30 CS-FXLIT-00464143
Nick - James PCHAT- 0x4000001ABADFF	[REDACTED] (CS) [REDACTED] (BofA) [REDACTED] (JPM) [REDACTED] (MS)	3/22/2012- 9/10/2012	EUR/USD USD/JPY EUR/JPY	Ex.32 JPMC-CIVIL-0000627708
Pockets PCHAT0x000000000000bcd b,	[REDACTED] (RBS, SC) [REDACTED] (RBS, SC, CS, BNP) [REDACTED] (CS)	8/9/2007- 10/15/2013	USD/JPY USD/KRW EUR/CHF CHF/AUD USD/CHF AUD/USD USD/MXN USD/ZAR	Ex.33 AO 018202-DOJ

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
			EUR/GBP EUR/AUD USD/ILS EUR/HUF USD/TRY EUR/SEK USD/SEK EUR/NOK AUD/JPY NZD/JPY USD/BRL EUR/JPY AUD/NZD	
Old Gits PCHAT-0x00000000000170ca	[REDACTED] (SC) [REDACTED] (BofA) [REDACTED] (Citi) [REDACTED] (HSBC, CS) [REDACTED] (Barclays, BNP) [REDACTED] (SC, BofA) [REDACTED] (SC) [REDACTED] (BofA) [REDACTED] (SC)	9/28/2007-4/3/2014	EUR/GBP EUR/HUF EUR/JPY EUR/CZK EUR/PLN EUR/USD EUR/RON EUR/TRY USD/HKD EUR/ZAR USD/CAD USD/JPY USD/INR USD/PLN USD/RUB USD/CZK USD/MXN	Ex.66 CS-FXLIT-05019878 Ex.41 CS-FXLIT-05019813

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
			USD/MYR USD/PHP USD/SGD USD/THB USD/TRY USD/TWD USD/ZAR USD/CNY	
The Dream Team PCHAT- 0x0000000000027a1f	<div>██████████ (GS)</div> <div>██████████ (GS, RBS, BofA)</div> <div>██████████ (RBS)</div> <div>██████████ (CS, Soc Gen)</div> <div>██████████ (DB, Soc Gen)</div> <div>██████████ (BofA)</div> <div>██████████ (BofA, CS)</div>	3/6/2008-6/8/2012	EUR/AUD AUD/NZD USD/NZD USD/AUD USD/CAD EUR/GBP EUR/USD USD/JPY GBP/CAD GBP/AUD GBP/USD	Ex.70 GS-FX-CIVIL-02033516 Ex.36 DB-0779634 Ex.6 GS-FX-CIVIL-02170840 Ex.7 GS-FX-CIVIL-02189427
Romf PCHAT-0x100000237E731	<div>██████████ (Barclays)</div> <div>██████████ (UBS)</div>	10-29-2008- 10/19/2012	EUR/GBP USD/ZAR USD/CAD EUR/CAD EUR/USD USD/JPY EUR/CHF	Ex.69 UBS_ZINC_CIV_000112271

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
Butter-The Comedian PCHAT-0x1000001035FE3	<div>██████████ (Citi)</div> <div>██████████ (SC)</div> <div>██████████ (RBC)</div> <div>██████████ (RBC, UBS)</div> <div>██████████ o (UBS)</div> <div>██████████ (HSBC)</div> <div>██████████ (MS)</div> <div>██████████ (GS)</div> <div>██████████ (Barclays)</div> <div>██████████ (Barclays)</div> <div>██████████ (DB)</div> <div>██████████ (BofA)</div>	10/28/2009- 9/12/2011	USD/BRL EUR/BRL CAD/BRL AUD/BRL	Ex.65 HBUS-FXLITIG- 0002117_T00001
Altakrupmilk PCHAT- 0x0000000000001db38	<div>██████████ (JPM)</div> <div>██████████ (MS)</div> <div>██████████ (CS)</div> <div>██████████ (BofA)</div>	12/5/2007- 7/25/2012	USD/CHF EUR/CHF EUR/GBP EUR/SEK USD/SEK USD/CAD USD/JPY EUR/USD GBP/NOK CAD/NOK EUR/CAD GBP/USD	Ex.27 JPMC-CIVIL-0000052607 Ex.57 CS-FXLIT-00695321 Ex.51 CS-FXLIT-10117134

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
Trap 5 PCHAT-0x4000001213BBA PCHAT-0x200000040D5B3	[REDACTED] (Barclays) [REDACTED] (BofA) [REDACTED] (CS, Barclays) [REDACTED] (Citi)	2/12/2009-2/1/2013	AUD/NZD USD/CHF EUR/CHF CAD/USD USD/CAD AUD/JPY EUR/CAD USD/JPY USD/SEK AUD/CAD AUD/USD GBP/CAD	Ex.40 CIV_00030564
Unnamed Chat Room PCHAT-0x2000000650417	[REDACTED] (RBS) [REDACTED] (CS)	5/5/2009-4/19/2010	EUR/USD AUD/USD AUD/JPY EUR/JPY GBP/JPY	Ex.29 RBS_IN_RE_FX_LITIG_00023541
Gang of 4 PCHAT-0x3000001DDA4A0	[REDACTED] (BoA) [REDACTED] (UBS) [REDACTED] (CS)	5/2/2011-1/4/2012	EUR/CHF GBP/USD AUD/USD USD/JPY USD/EUR USD/NZD USD/CHF	Ex.28 CS-FXLIT-00819235

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
Head Up, UR Thinking T PCHAT-0x10000026becaa	[REDACTED] (CS) [REDACTED] (HSBC)	7/26/2012- 12/10/2012	AUD/NZD AUD/USD EUR/JPY AUD/MXN GBP/AUD EUR/AUD EUR/GBP EUR/ZAR EUR/SEK EUR/CAD USD/SEK USD/MXN NOK/SEK	Ex.44 CS-FXLIT01253336
Dream Team PCHAT-0x30000001BFBB1	[REDACTED] (DB) [REDACTED] (DB) [REDACTED] (DB) [REDACTED] (BOTM) [REDACTED] (DB)	11/14/2008- 1/15/2012	AUD/JPY USD/JPY USD/MXN EUR/JPY	Ex.46 BTFX-00044908
For Lions Bagels PCHAT-0x1000002694096	[REDACTED] (UBS) [REDACTED] (RBC) [REDACTED] (SC) [REDACTED] (BNP, Barclays) [REDACTED] (Barclays)	2/14/2011- 10/15/2013	USD/AUD USD/CHF EUR/JPY USD/NZD USD/MXN USD/GBP EUR/CAD	Ex.72 UBS_ZINC_CIV_000203342 Ex.48 UBS_ZINC_CIV_000164445

ROOM NAME AND/OR PCHAT NUMBER	PARTICIPANTS (DEFENDANT(S))	TIMEFRAME	CURRENCY PAIRS DISCUSSED	EXAMPLE CHATS
Zar Chat PChat-0x3000001DE4B85	[REDACTED] (Citi) [REDACTED] (JPM) [REDACTED] (Barclays) [REDACTED] (BNP)	9/16/2011-2/5/2013	USD/ZAR USD/TRY EUR/CZK USD/ILS EUR/PLN USD/MXN USD/RON EUR/ILS	Ex.92 JPMC-CIVIL-0000070977 Ex.93 BNP0008769
Young Guns PCHAT- 0x000000000002affd	[REDACTED] (Citi) [REDACTED] (GS)	4/4/2008-7/9/2013	GBP/USD USD/CAD EUR/GBP	Ex.94 GS-FX-CIVIL-02366353 Ex.95 GS-FX-CIVIL-02521380 Ex.96 GS-FX-CIVIL-02214605

APPENDIX E

SUMMARY OF GOVERNMENT AND ENFORCEMENT FINES BY AGENCIES OTHER THAN DOJ	
U.S. Commodity Futures Trading Commission (CFTC)	
Citibank, N.A.	\$310,000,000
HSBC Bank PLC	\$275,000,000
JPMorgan Chase Bank, N.A.	\$310,000,000
Royal Bank of Scotland PLC	\$290,000,000
UBS AG	\$290,000,000
Barclays Bank PLC	\$400,000,000
TOTAL	\$1,875,000,000
U.K. Financial Conduct Authority (U.K. FCA)	
Citibank, N.A.	£225,575,000 (\$355,957,350)
HSBC Bank PLC	£216,363,000 (\$341,420,814)
JPMorgan Chase Bank, N.A.	£222,166,000 (\$350,577,948)
Royal Bank of Scotland PLC	£217,000,000 (\$342,426,000)
UBS AG	£233,814,000 (\$368,958,492)
Barclays Bank PLC	£284,432,000 (\$441,666,010)
TOTAL	\$2,201,006,614
Office of the Comptroller of the Currency (OCC)	
Bank of America, N.A.	\$250,000,000
Citibank, N.A.	\$350,000,000
JPMorgan Chase Bank, N.A.	\$350,000,000
TOTAL	\$950,000,000
Swiss Financial Market Supervisory Authority (Swiss FINMA)	
UBS AG	CHF 134,000,000 (\$138,658,940)
TOTAL	\$138,658,940
New York Department of Financial Services (NYDFS)	
Barclays Bank PLC	\$485,000,000
BNP Paribas S.A.	\$350,000,000
Credit Suisse AG	\$135,000,000
Goldman Sachs Group, Inc.	\$54,750,000
TOTAL	\$1,024,750,000
Board of Governors of the Federal Reserve System (Federal Reserve)	
Barclays Bank PLC	\$342,000,000
Bank of America Corp.	\$205,000,000
BNP Paribas S.A.	\$246,000,000
Citigroup Inc.	\$342,000,000
Deutsche Bank AG	\$136,900,000
HSBC Bank PLC	\$175,000,000
JPMorgan Chase & Co.	\$342,000,000
UBS AG	\$342,000,000
Royal Bank of Scotland PLC	\$274,000,000
Goldman Sachs Group, Inc.	\$54,750,000

SUMMARY OF GOVERNMENT AND ENFORCEMENT FINES BY AGENCIES OTHER THAN DOJ	
TOTAL	\$2,459,650,000
Brazil Council for Economic Defense (CADE)	
Barclays PLC Citicorp Deutsche Bank AG HSBC Bank PLC JP Morgan Chase & Co.	R\$ 183,500,000 (\$54,400,000)
TOTAL	\$54,400,000
South Africa Competition Commission	
Citibank, N.A.	R69,500,860 (\$5,300,000)
TOTAL	\$5,300,000

CORRECTED APPENDIX F**EXAMPLES OF PLAINTIFFS' FX COUNTERPARTIES AND
CURRENCY PAIRS TRADED**

PLAINTIFF	EXAMPLES OF DEFENDANT COUNTERPARTIES	EXAMPLES OF CURRENCY PAIRS TRADED
Aureus Currency Fund L.P.	Morgan Stanley ¹	EUR/USD; EUR/CHF GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/SEK; EUR/JPY; AUD/USD; NZD/USD; EUR/AUD; EUR/PLN; USD/CZK; USD/PLN; GBP/AUD; CAD/CHF; EUR/NZD; AUD/CAD; AUD/NZD; EUR/SEK; EUR/CAD; AUD/JPY ²
The City of Philadelphia, Board of Pensions and Retirement	Barclays, BNP Paribas, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMC, Morgan Stanley, RBC, RBS, Standard Chartered, UBS AG ³	EUR/USD; EUR/CHF; GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/RUB; USD/SEK; EUR/JPY; AUD/USD; USD/CNH; NZD/USD; USD/TRY; USD/INR; USD/ZAR; EUR/SEK; AUD/JPY; EUR/NOK; USD/PLN; EUR/AUD; EUR/CAD; USD/DKK; USD/SGD; USD/HKD; EUR/GBP; GBP/AUD; GBP/CAD; USD/HUF; USD/ILS; CAD/CHF; GBP/CHF; USD/CZK; USD/RON; USD/GHS; GBP/JPY; CHF/JPY; EUR/DKK; EUR/TRY; EUR/PLN ⁴

¹ AURE00000111.

² Velador Currency Pairs Spreadsheet.

³ PHIL00034537

⁴ Velador Currency Pairs Spreadsheet.

Employees' Retirement System of the Government of the Virgin Islands	Barclays, BNP Paribas, Citibank, Goldman Sachs, HSBC, JPMC, Morgan Stanley, RBC, RBS, UBS AG ⁵	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/NOK; USD/SEK; AUD/USD; USD/HKD NZD/USD; USD/DKK; USD/MXN; USD/SGD ⁶
Employees' Retirement System of Puerto Rico Electric Power Authority	Barclays, BNP Paribas, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, Morgan Stanley, RBS, Standard Chartered, UBS AG ⁷	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/SEK; AUD/USD; USD/SGD; NZD/USD; USD/HKD; USD/ZAR; USD/TRY USD/ILS; USD/HUF; USD/DKK ⁸
Fresno County Employees' Retirement Association	Bank of America, Barclays, BNP Paribas, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, Morgan Stanley, UBS AG ⁹	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/SEK; AUD/USD; USD/CNH; NZD/USD; USD/HKD; EUR/CAD; USD/ILS; EUR/SEK; CHF/SGD; USD/ZAR; USD/HKD; USD/HUF; USD/TRY; USD/PLN; USD/SGD; USD/DKK; CAD/JPY; AUD/CAD; GBP/JPY; EUR/GBP; USD/RUB; USD/INR; USD/RON; USD/CNH; EUR/AUD; AUD/NZD ¹⁰

⁵ VIRG00050264.

⁶ Velador Currency Pairs Spreadsheet.

⁷ PUER00142700.

⁸ Velador Currency Pairs Spreadsheet.

⁹ FCER00029493.

¹⁰ Velador Currency Pairs Spreadsheet.

Haverhill Retirement System	Barclays, HSBC, Goldman Sachs, JPMC, UBS AG ¹¹	EUR/USD; USD/JPY; USD/CAD; EUR/PLN; EUR/CAD; GBP/USD; EUR/GBP; NZD/USD; USD/MXN; AUD/USD; USD/PLN; USD/NOK; USD/SEK ¹²
State-Boston Retirement System	Bank of America, Barclays, BNP Paribas, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMC, Morgan Stanley, RBC, RBS, Standard Chartered, UBS AG ¹³	EUR/USD; EUR/CHF; GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/SEK; EUR/JPY; AUD/USD; NZD/USD; USD/HKD; USD/TRY; USD/INR; USD/ZAR; EUR/SEK; AUD/JPY; EUR/NOK; USD/PLN; EUR/AUD; USD/HUF; USD/DKK; USD/SGD; USD/ILS; EUR/GBP; EUR/DKK; EUR/NZD; EUR/PLN; USD/CNH; AUD/CAD; EUR/CAD; NZD/JPY; GBP/JPY; CAD/JPY; AUD/NZD; EUR/HUF; EUR/CZK; USD/CZK; GBP/CAD; USD/CNY; EUR/RON; USD/RUB ¹⁴
Syena Global Emerging Markets Fund, LP	Goldman Sachs ¹⁵	EUR/USD; GBP/USD; USD/CAD; USD/NOK; USD/SDG; USD/HKD; USD/ZAR ¹⁶

¹¹ HAVE00015037.

¹² Velador Currency Pairs Spreadsheet.

¹³ BOST00021260.

¹⁴ Velador Currency Pairs Spreadsheet.

¹⁵ SYEN00086769

¹⁶ *Id.*

Tiberius OC Fund, Ltd.	Morgan Stanley ¹⁷	EUR/USD GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/SEK; AUD/USD; USD/CNH; USD/SDG; NZD/USD; USD/HKD; USD/TRY; USD/ZAR; USD/PLN; USD/ILS; USD/DKK ¹⁸
Value Recovery Fund L.L.C.	Goldman Sachs, JPMC ¹⁹	EUR/USD; GBP/USD; USD/CHF; AUD/USD; USD/ZAR ²⁰
United Food and Commercial Workers Union and Participating Food Industry Employers Tri-State Pension Fund	Barclays, BNP Paribas, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMC, Morgan Stanley, UBS AG ²¹	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/MXN; USD/NOK; USD/SEK; AUD/USD; USD/SDG; NZD/USD; USD/HKD; USD/ZAR; USD/ISK ²²
Oklahoma Firefighters Pension and Retirement System	Barclays, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMC, Morgan Stanley, UBS AG ²³	USD/EUR; USD/JPY; GBP/USD; NZD/USD; USD/CHF; USD/SEK; USD/PLN; USD/HUF; AUD/USD; USD/NOK; USD/ILS; USD/HKD; USD/SGD; USD/CAD; USD/TRY; USD/ZAR; USD/MXN; USD/INR; EUR/DKK; USD/DKK ²⁴
Systrax Corporation	UBS AG ²⁵	EUR/USD; USD/CAD; USD/JPY; USD/CHF ²⁶
J. Paul Antonello	[Exchange Plaintiff]	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/CHF; AUD/USD ²⁷

¹⁷ Tiberius00009215; Varga Dep. Ex. 7.

¹⁸ *Id.*

¹⁹ VRF00004673; VRF00004942.

²⁰ Velador Currency Pairs Spreadsheet.

²¹ UFCW00054646.

²² *Id.*

²³ OKLA00016179.

²⁴ Velador Currency Pairs Spreadsheet.

²⁵ SYST00002810.

²⁶ SYST00002512.

²⁷ ANTO000000001.

Marc G. Federighi	[Exchange Plaintiff]	EUR/USD ²⁸
Thomas Gramatis	[Exchange Plaintiff]	EUR/USD ²⁹
Doug Harvey	[Exchange Plaintiff]	EUR/USD; EUR/CHF; GBP/USD; USD/CAD; USD/JPY; USD/CHF; USD/MXN; USD/NOK; USD/RUB; EUR/JPY; EUR/GBP AUD/USD; USD/CNH; NZD/USD; USD/ZAR; EUR/SEK; EUR/NOK; USD/PLN; EUR/AUD ³⁰
Izee Trading Company	[Exchange Plaintiff]	EUR/USD ³¹
John Kerstein	[Exchange Plaintiff]	EUR/USD ³²
Michael Melissinos	[Exchange Plaintiff]	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/CHF; AUD/USD; NZD/USD ³³
Mark Miller	[Exchange Plaintiff]	EUR/USD; USD/JPY; USD/CHF; AUD/USD ³⁴ ;
Robert Miller	[Exchange Plaintiff]	EUR/USD; USD/JPY ³⁵
Richard Preschern d/b/a/ Preschern Trading	[Exchange Plaintiff]	EUR/USD; GBP/USD; USD/CAD; USD/JPY; USD/CHF; EUR/JPY; AUD/USD; EUR/CHF; EUR/AUD; AUD/JPY; CHF/JPY; GBP/CHF; NZD/USD
Peter Rives	[Exchange Plaintiff]	EUR/USD; GBP/USD; USD/JPY; USD/CHF ³⁶
Michael J. Smith	[Exchange Plaintiff]	EUR/USD; USD/CAD; USD/JPY; EUR/JPY; AUD/USD; USD/GBP ³⁷
Casey Sterk	[Exchange Plaintiff]	EUR/USD; USD/JPY; AUD/USD ³⁸

²⁸ FEDE00000037.

²⁹ GRAM00003143.

³⁰ HARV00024175.

³¹ IZEE00018890.

³² KERS00001722.

³³ MELI00050553.

³⁴ MIRI00085901.

³⁵ MIRI00083849.

³⁶ MIRI00085913.

³⁷ SMIT00003848.

³⁸ JSTE00000040.

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

**Deposition of Robert Jones, Executive Director of Plaintiff Oklahoma
Firefighters Pension and Retirement System – Exhibit 97**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. What is this lawsuit about?</p> <p>A. It's an antitrust case against a group of banks regarding questionable activity related to FX trades. [11:25-12:3]</p>
	<p>Q. And who are the defendants in this lawsuit?</p> <p>A. I don't know if I can recite all 12, but--</p> <p>Q. Representative sample.</p> <p>A. Well, just a minute. J.P. Morgan -- J.P. Morgan, your client, Credit Suisse. [12:12-19]</p>
	<p>Q. And can you just be a little more specific on what you mean by what was going on. Like, what specifically were you reacting to when you hired Klarity FX.</p> <p>A. It was market-makers were playing around with the bid spread – with the bid-ask spread and affecting the FX transactions on buys and sells of international securities that we were doing on a routine basis. [132:19-133:3]</p>
	<p>Q. Is it your claim that spreads on FX transactions during the class period were manipulated by the defendants?</p> <p>A. Yes. [157:21-24]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups or classes of plaintiffs in this suit?</p> <p>A. So I understand.</p> <p>Q. Which group is Oklahoma Firefighters in?</p> <p>A. Really OTC. We're in the OTC Group, I believe. [12:4-11]</p>
	<p>Q. And you said you were part of the OTC group. What's the OTC Group?</p> <p>A. The OTC group is a group that – basically, it's related to the types of trades we made, and we're grouped like that. I mean, there's many defendants in different situations. And we're in the – we're in the group where the trades were OTC. [12:20-13:4]</p>
Plaintiff's Involvement in the Case	<p>Q. Who at Oklahoma Firefighters was involved in the decision to bring this lawsuit?</p> <p>A. Well, the final decision was made by the board of trustees. Information to the board was brought by our general counsel and people from Scott + Scott, and I was kind of involved in those opening considerations. [13:5-13]</p>

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SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Can you please describe your involvement in the litigation?</p> <p>A. Mine has been a overview of the actions of the attorneys retained by the board, which is primarily Scott + Scott and Phillips Murrah firm in Oklahoma City as to how we proceeded on this problem. [153:16-22]</p>
	<p>Q. Has Oklahoma Firefighters ever circulated a notice telling its employees to preserve all documents related to this case?</p> <p>A. Oh, yeah. That's standard. We do that for a lot of cases.</p> <p>Q. And are you aware of whether any documents relating to this case were ever destroyed?</p> <p>A. No. [159:25-160:9]</p>
	<p>Q. Did you search any files?</p> <p>A. Oh, yes. Yes.</p> <p>Q. And emails were searched?</p> <p>A. And what?</p> <p>Q. Emails as well?</p> <p>A. Yes.</p> <p>Q. Were non-email electronic files searched?</p> <p>A. Yes.</p> <p>Q. Were any systems used to keep track of financial transactions searched?</p> <p>A. Yes.</p> <p>Q. Centralized servers?</p> <p>A. Yes.</p> <p>Q. Desktop hard drives?</p> <p>A. Yes.</p> <p>Q. Laptop hard drives?</p> <p>A. I don't use a laptop. So – if we had them, I'm sure they were searched.</p> <p>Q. Have there been any major changes to Oklahoma Firefighters' IT systems since the time period relevant to this case?</p> <p>A. IT systems change all the time. I mean, it's kind of the nature of the beast. So I guess I would say yes. But nothing specific as to FX – y'all's request for production, no.</p> <p>Q. You mentioned that emails were searched. Whose emails?</p> <p>A. Well, mine sure were, and I'm assuming define Michael's was and Chase Rankin's were and Terri Williams' were. It's very possible they checked all our employees rather than, you know, whether they were involved in investments or not. I mean, once you start checking, you can just do them all. But I wasn't directly supervising, so I don't know. I delegated that to Duane Michael to handle that.</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's FX Transactions	<p>Q. How did FX trading fit within Oklahoma Firefighters' overall investment strategy of the fund?</p> <p>A. It comes in with the -- when we started hiring international domestic and fixed income managers, that was the primary action. We were hiring managers. And with that hiring of the managers was a recognition that the international currency would have to be bought and sold to facilitate the buys and sells of the securities. So that -- it did kind of -- went with the decision to invest internationally. [39:11-24]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

Deposition of Arne Hoel, Partner at Plaintiff Aureus Currency Fund L.P. – Exhibit 98

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Can you tell me what this lawsuit is about?</p> <p>A. Well, best of my understanding there was collusion amongst a number of large banks, and a lot of traders like Danny and the investors that they represented were potentially damaged because of that collusion. And if – if I understood it correctly, issues both with how much was – or what the spread was on trades. There may have been some colluding on that, increasing the spreads by a lot of these big institutions. And then more complicated than that also with respect to potentially some market manipulation as far as where stops may have been. That somehow they could dip below a stop, pull the stops, and then it would continue again. [52:13-22]</p>
	<p>Q. Okay. Can you tell me who the defendants are in this suit?</p> <p>A. Well, it's a lot of big, big banks, and, you know, I remember some of the names. You know, B of A, Deutsche Bank, Royal Bank of Scotland, JP Morgan, Morgan Stanley, Goldman Sachs. That type of – those types of institutions. [49:13-19].</p>
Plaintiff's Involvement in the Case	<p>Q. And who, if anyone, reviewed this complaint on behalf of Aureus before it was filed?</p> <p>A. Before it was filed? Danny was the only one involved.</p> <p>Q. Did – was it his decision to bring these claims on behalf of Aureus?</p> <p>A. Yes.</p> <p>Q. Did he consult with you and the other partners before bringing these claims?</p> <p>A. He told us about them. I don't know if he consulted. Said he wanted to do it, yes. [50:20-51:5]</p>
	<p>Q. And did Aureus have any policies or procedures, formal or informal, related to retaining documents?</p> <p>Mr. Dirksen: Objection to form.</p> <p>The Witness: Danny kept everything, as far as I know. No policies to get rid of stuff when it came to him.</p> <p>Q. What steps, if any, were taken by Aureus to preserve documents in this case?</p> <p>A. In this case, specifically?</p> <p>Q. Yes.</p> <p>A. I doubt Danny would have done anything differently. He would have just – he always kept everything. [55:6-20]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's FX Transactions	<p>Q. Okay. So you would – you would estimate that roughly 100 percent of the fund's trading was in FX instruments?</p> <p>A. To my knowledge, yeah.</p> <p>Q. And those trades were primarily FX forward contracts?</p> <p>A. That was my understanding, yep. [19:3-13]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

**Deposition of Christopher R. DiFusco, Chief Investment Officer for Plaintiff
City of Philadelphia Board of Pensions and Retirement – Exhibit 99**

Adequacy Factor	Quotations and Citations
Knowledge of the Case	<p>Q. And what's your understanding of what this lawsuit is about?</p> <p>A. We – we are – my understanding is that we're a class representative. There is a group of plaintiffs who have alleged certain violations under the Sherman Act regarding price fixing or collusion in the foreign exchange market. [11:17-24]</p>
	<p>Q. And can you identify the defendants in this litigation?</p> <p>THE WITNESS: There's multiple defendants. A group of banks; there was multiple defendants among them, Credit Suisse, JP Morgan, RBS, UBS. I believe others, but those are some of the representative defendants, as I understand the Complaint. [12:16-24]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. And do you know which group or class Philadelphia Retirement is a part of?</p> <p>Q. Which group?</p> <p>A. We're – my understanding is that we're in the group of plaintiffs that are alleging violations or collusion in the spot market. [12:6-15]</p>
Plaintiff's Involvement in the Case	<p>Q. Was anyone at Philadelphia Retirement involved in the decision to bring this lawsuit?</p> <p>A. As I said, the decision ultimately rests with the Solicitor's Office. They certainly on – in most matters, as a general rule, take the client's feedback and perspective into account. But ultimately, the decision is not that of the Board, the executive director or the staff; it's of the – it's of the solicitor. [160:3-13]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

	<p>Q. Could you describe Philadelphia Retirement's involvement in the litigation so far?</p> <p>A. So, I mean, one thing that's – you know, always important to remember about the City's structure, which I think is different than a lot of other public pension plans, is that ultimately, per the City Charter, the Solicitor's Office has final say over all litigation. So in theory, even if an underlying client didn't want to pursue litigation, the Solicitor's Office, in his or her, you know, wisdom could choose to move forward anyway. So a lot of the responsibility for the City falls on them. The City – the Pension Board's staff's involvement has been to discuss the case at times, get updates either from outside counsel or for folks that we work with in the Solicitor's Office to gather documents, to review documents, to get periodic updates on the status of the case, any news that has come out related to, you know, settlements by other entities; things of that nature. You know, answer questions if we can be helpful in explaining to counsel what a various document means or what a various manager did or what – you know, during what time period. [158:24-160:2]</p>
	<p>Q. Can you tell me the steps the Board took to collect documents for production in this litigation?</p> <p>A. Sure. We received notice or update from our counsel, via internal counsel at the Solicitor's Office or outside counsel, you know, either prior to or during the course of litigation instructing us to make sure that certain documents were preserved and, you know, collected, not destroyed. Relevant notice would be sent out to all members of the staff who might or who could possibly be in possession of such documents. I believe notice was also given to the relevant technical folks over at OIT about not, you know, purging any relevant E-mails or electronic documents . . .</p> <p>. . . And then as instructed, with the assistance of counsel, we collected – searched for and collected all paper records that we could find that were responsive, or appeared possibly responsive, to defendant's request for information. And then through the assistance of outside counsel and technical experts, they assisted, with OIT's help, in preserving electronic information.</p> <p>Q. You said that you collected all paper records and preserved electronic records. Did you review electronic records, as well?</p> <p>A. Yes, to the extent that they hadn't – to the extent that they weren't now on, you know, back-up tapes or in another</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

	<p>location, yes. If we were instructed to look for E-mails that had certain, you know, key words or topics or dates, then the person or persons on staff that were identified as most likely to have responsive records would search their computer files or shared drive to see, you know, what could be located and turned over.</p> <p>Q. Do you know whose records were searched?</p> <p>A. I believe the entire – I believe the entirety of the shared drive was reviewed, and I believe documents from my computer, from Brad's, perhaps Dan Falkowski's was looked at. I believe that's right.</p> <p>Q. And when you say your computer was searched, those are files that are located just on your computer and not on the shared drive?</p> <p>A. Some of it's both. We may have certain – a lot of things that we have in our own E-mail attachments, reports we write, items we receive from the investment managers. [151:13-153:17].</p>
Plaintiff's FX Transactions	<p>Q. The second full sentence beginning, "Plaintiff, the City of the Philadelphia, Board of Pensions and Retirement engaged in FX spot and outright forward transactions directly with," and then it lists a number of defendants during the class period.</p> <p>Do you know whether Philadelphia Retirement engaged in any FX instruments with defendants other than spot and outright forward transactions?</p> <p>A. I don't know. I don't believe they did, but I don't know with certainty. I don't believe they did, however, or we did, I should say. [160:20-161:8]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

**Deposition of Glenville Henderson, Investment Analyst of Plaintiff Employees' Retirement
System of the Government of the Virgin Islands – Exhibit 100**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Do you have – do you understand what this litigation is about?</p> <p>A. Yes, I do.</p> <p>Q. And what is it about?</p> <p>A. This litigation is an antitrust litigation based on anticompetitive – this – we are alleging that the parties – the parties that – we are alleging that the investment banks proceeded in antitrust and anticompetitive practices.</p> <p>Q. Do the allegations relate to a particular financial market?</p> <p>A. FOREX.</p> <p>Q. FOREX.</p> <p>A. Yeah. [12:5-20]</p>
	<p>Q. Okay. Who are the defendants in this litigation?</p> <p>A. The defendants are a number of big banks; to name a few, Credit Suisse, Morgan Stanley, Deutsche.</p> <p>Q. Okay. Can you name any other defendants?</p> <p>A. There are a few other banks. It's a whole host of banks. [13:3-11]</p>
	<p>Q. Does GERS claim that spreads on FX transactions during the period of 2007 to 2013 were manipulated by the defendants?</p> <p>A. That is part of our claim, yes.</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Okay. Do you understand that GERS is a plaintiff in this litigation?</p> <p>A. Yes. [12:2-4]</p>
	<p>Q. Okay. Do understand that there are two groups or classes of plaintiffs in this litigation?</p> <p>A. Yes, I do.</p> <p>Q. And which group is GERS in?</p> <p>A. We are representing the OTC group. [12:21-13:2]</p>
Plaintiff's Involvement in the Case	<p>Q. And without revealing the contents of these conversations, were you involved in the drafting of this complaint? And by you, I mean GERS.</p> <p>A. The actual drafting of the complaint?</p> <p>Q. Yes.</p> <p>A. Through – yes – through – through our conversations with counsel. Yes. [249:21-250:5]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Okay. Please describe GERS' involvement in this litigation.</p> <p>A. Could you clarify that question?</p> <p>Q. How often does – without revealing the contents of any conversations with counsel, how often does GERS speak to counsel?</p> <p>A. We speak to counsel on a regular basis as it pertains to the case.</p> <p>Q. And what does “regular basis” mean?</p> <p>A. Well, definitely since the prospective of this deposition was coming up with contact around the – in the last eight months. But even prior to that, we have always been in contact with our counsel as it relates to keeping us – monitoring and keeping us abreast of all the developments of the case.</p> <p>Q. And without revealing the contents of any meeting with counsel, how often does GERS meet with counsel?</p> <p>MR. O'MARA: Objection to form.</p> <p>A. I can't speak to a specific number, but as often as necessary.</p> <p>Q. When would a meeting with counsel be necessary?</p> <p>MR. O'MARA: Objection to form.</p> <p>A. Whenever – whenever – whenever counsel feels that there's some – there's important information to be shared about the case. [253:24-255:5]</p>
	<p>Q. Do you recognize this document?</p> <p>A. Yes, I do.</p> <p>Q. What is it?</p> <p>A. It's the plaintiff's initial disclosures.</p> <p>Q. Was GERS involved in the drafting of this document?</p> <p>A. Yes. In conjunction with our counsel. [258:13-21]</p>
	<p>Q. Does GERS maintain paper files related to its investments?</p> <p>A. All – we do receive paper documents, but all paper documents are scanned electronically and saved on drives. [268:3-8]</p>
	<p>Q. Did GERS circulate a notice telling its employees to preserve all documents relating to this litigation?</p> <p>MR. O'MARA: Objection to form.</p> <p>A. Yes. A notice was sent out by GERS legal counsel advising –</p> <p>MR. O'MARA: That's –</p> <p>Q. That's –</p> <p>MR. O'MARA: – all you need to say. You don't need to get into any of the substance.</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. And when was this notice sent out?</p> <p>A. I can't recall the time – the date.</p> <p>Q. Were any documents relating to this case destroyed?</p> <p>MR. O'MARA: Objection to form.</p> <p>A. To my knowledge, no. [272:1-19]</p>
	<p>Q. Sure. Who at GERS was involved in the document collection efforts in response to this request?</p> <p>A. Okay. So our IT – IT individuals were focal in scrubbing the drives for the data requested. [268:13-18]</p>
	<p>Q. Were the fee schedules produced in this litigation?</p> <p>A. We produced whatever documents our legal counsel requested. So I have no reason to believe that we did not. [109:10-14]</p>
Plaintiff's FX Transactions	<p>Q. What FX products did GERS through the investment managers trade in, in 2007 to 2013?</p> <p>A. Primarily, the managers probably would have – primarily, the managers would have traded in currencies. [75:12-17]</p>
	<p>Q. During the period 2007 to 2013, did GERS trade in FX products?</p> <p>A. Could you – could you repeat the timeframe?</p> <p>Q. 2007 to 2013.</p> <p>A. Yes, I believe it did, the GERS through the investment managers, to be specific. [75:4-11]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

**Deposition of Jose Forastieri-Maldonado - Supervisor, Accounting Department for Plaintiff
Employees Retirement System of Puerto Rico Electric Power Authority – Exhibit 101**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q And do you know what this lawsuit is about?</p> <p>A It is about an antitrust between banks.</p> <p>Q And do you know the allegations in this lawsuit?</p> <p>A That they colluded in the exchange rates in trading.</p> <p>Q For a particular financial product?</p> <p>A As far as I – the money – for the exchange rates between countries. [12:4-:14]</p>
	<p>Q And do you know who the defendants are in this litigation?</p> <p>A Yes, I have read on the brief and it is basically most banks, major banks in London. [12:25-13:3]</p>
	<p>Q Were spreads on FX transactions manipulated by the defendants during the period of 2007 to 2013?</p> <p>A According to the document, yes. [171:14-17]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q Okay. Do you understand that there are two groups or classes of plaintiffs in this?</p> <p>A Yes.</p> <p>Q Do you know which group ERS-PREPA is in?</p> <p>A Two, Class II, which is the over the counter – not the over the counter. The actual is – I don't recall the exact word, but it is when they made a purchase. At that time, they got the exchange rate. [15:18-:24]</p>
Plaintiff's Involvement in the Case	<p>Q Please describe ERS-PREPA'S involvement in this litigation.</p> <p>A We are an investor. We put money so that the money managers invest on our behalf to accumulate wealth so we can pay our pension funds, pension.</p> <p>Q I am asking specifically about sort of the day-to-day operations of this case. What is ERS-PREPA'S involvement in the litigation? Not the trading that occurred.</p> <p>A Okay. Provide documentation and clarifying the data that we received.</p> <p>Q Provide documentation and clarify the data that you received?</p> <p>A That we received from your request from the money managers or custodial bank.</p> <p>Q Without disclosing the content of any conversations with counsel, how often does ERS-PREPA speak with counsel regarding the litigation?</p>

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	<p>A Any time – PREPA speaks with counsel any time counsel needs information or needs them to read a document or send a document to work on their behalf.</p> <p>Q So it would be on an ad hoc basis? It would be whenever something came up? There wouldn't be routine conversations?</p> <p>A That's correct.</p> <p>Q How often does ERS-PREPA meet with counsel?</p> <p>A As it needed.</p> <p>Q As needed. Okay. Is ERS-PREPA a named plaintiff in this litigation?</p> <p>A Yes.</p> <p>Q And what is ERS-PREPA'S understanding of the obligations as a named plaintiff?</p> <p>A Provide all of the data, answer all the questions, and clarify anything that will benefit the outcome of the suit. [167:24-170:22]</p>
	<p>Q Who at ERS-PREPA was involved in the decision to bring this lawsuit?</p> <p>A The administrator and the board. [167:24-170:22]</p>
Plaintiff's FX Transactions	<p>Q Okay. And as – did ERS-PREPA engage investment managers to handle its trading?</p> <p>A Yes, all the time. [14:18-20]</p>

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	<p>Q Can you please describe to me ERS-PREPA'S investment strategy?</p> <p>A It is very diversified, extremely diversified so that they can maximize the return and protect the assets so that they can meet the pension benefit requirements.</p> <p>Q And how did ERS-PREPA'S FX trading fit into its larger investment strategy?</p> <p>A It is part of the diversification. They – it is – they are taking the opportunity of the emerging markets to maximize their return. How should I say – that's basically it.</p> <p>Q So did ERS-PREPA only trade in emerging market currencies or did they trade in other currencies?</p> <p>A No, it is just all – other currencies. It is as the international money managers took the decision on investing. They were chosen by their investment strategy so that they can compliment the rest of the portfolio in maximizing the return of the whole portfolio.</p> <p>Q Did ERS-PREPA have a separate investment strategy specifically for its FX trading?</p> <p>A No.</p> <p>Q So it was part of the larger strategy?</p> <p>A Yes. [40:2-41:3].</p>

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**Deposition of Donald Kendig – Retirement Plan Administrator for Plaintiff Fresno County
Employees' Retirement Association – Exhibit 102**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q Do you know what this lawsuit is about?</p> <p>A Uh-huh.</p> <p>Q What is this lawsuit about?</p> <p>A Has to do with manipulation of the foreign exchange rates through various means. [11:9-13]</p>
	<p>Q And who are the defendants in this litigation?</p> <p>A Would you like all of them or . . .</p> <p>Q As many as you can name.</p> <p>A Credit Suisse, Bank of America, Merrill Lynch, J.P. Morgan, UBS, Deutsch Bank, et al. There's a whole bunch. If it's a very large bank that handles foreign exchange it's probably involved. [11:14-20]</p>
	<p>Q Is FCERA alleging that spreads on FX transactions during the period of 2007 to 2013 were manipulated by the defendants?</p> <p>A Yes. [181:14-17]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q Which class is FCERA in?</p> <p>A OTC. [11:7-8]</p>
Plaintiff's Involvement in the Case	<p>Q What did you do to prepare to give testimony today?</p> <p>A I reviewed documents. I've had about three meetings with counsel. I have never had a deposition before, so I just was having an orientation on what happens, where everyone is going to sit, who's involved, and basically that's it, three meetings.</p> <p>Q Okay, and without revealing the content of those meetings, for the first meeting about how long did you meet?</p> <p>A I think about three and a half hours.</p> <p>Q And how long did you meet for the second meeting?</p> <p>A That was shorter, maybe – maybe no more than two.</p> <p>Q Okay.</p> <p>A I mean, I'm speculating. I don't remember.</p> <p>Q And the third meeting, about how long did you meet with counsel in the third meeting?</p> <p>A About three and a half hours. [16:25-19:1]</p>
	<p>Q You can set it partly to the side, but you're welcome to keep it handy. Without revealing the content of this conversation, how often do you speak to counsel regarding the litigation?</p> <p>A This litigation?</p> <p>Q Yes.</p> <p>MR. BARENBAUM: By "speak" you mean communicate?</p>

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	<p>BY MS. BARONE: Q Communicate, yes. A I receive periodic updates. The way securities litigation works it takes years. Sometimes the communications are frequent, sometimes maybe an annual update. Recently it's been more frequent. I don't know if that helps your answer there, but . . . Q And how often does FCERA meet with counsel regarding the litigation? Again, not disclosing the content of those meetings. MR. BARENBAUM: By "meet" you mean in person? MS. BARONE: Yes. THE WITNESS: We had those three meetings recently, we're having this one now, four. We had an update in person about a year ago, five. It's generally over the phone and via e-mail. [179:13-180:12]</p>
	<p>Q Did FCERA circulate a notice telling its employees to preserve all documents relating to this case? MR. BARENBAUM: Same objection. THE WITNESS: Yes.</p>
	<p>Q Thank you. Turning to FCERA-22, on Page 6 it lists requests. It begins with the document requests Number 1 to 15. And subject to plaintiffs' responses and objections, what steps did FCERA take to collect documents in response to this request? MR. BARENBAUM: I'm just going to object to the extent that this calls for attorney/client communications, which is privileged. But, otherwise, you're welcome to answer the questions regarding your knowledge of the collection. THE WITNESS: Sure. We generally do a key word search for documents with names. We're given names to search on, especially when we're talking about e-mail communications and such. We do server searches with the same key words and all that. When given a request to look for something, we follow the instructions of the requester.</p>

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	<p>Q And subject to plaintiffs' responses and objections, what steps did FCERA take to respond to this request, again without revealing the contents of any privileged communications?</p> <p>A Well, I think it's a similar process. We just go do a new search to see if there's anything there. And I don't know how it's all consolidated to make sure we don't give duplicate records, but we do another search. Maybe the key words are different. And depending on the search criteria, it will yield different documents and such. But, again, I do use e-mail centralized servers. And then I didn't communicate this before, but employees are asked to also search – you know, to do the search to show anything that they might have. We don't have a lot of employees involved, but then, you know, to your concern about C drives and such affected employees, if they have anything, they're asked to respond, if that helps at all.</p> <p>Q So e-mails were searched in response to this request?</p> <p>A Well, this one – to the extent that – I don't know that e-mails were requested on this because you're talking about a particular period. I'd have to look at it for the specifics. Because an initial e-mail search was done in the beginning, but to the extent the search criteria were expanded or changed, we would do a search again. But if it was the same search criteria, I'm speculating that – but I'm not going to speculate. Like I say we generally get the instructions and we carry it out and then forward the data. [188-22-190:3]</p>
	<p>Q Who at FCERA has been involved in the document collection efforts in response to this?</p> <p>A Conner Hinds, let's see, Becky Van Wyk, spelled W-I-C-K (sic.). Let's see, there's some other names in that something 26 report, but . . . Let's see, we had some accountants involved with it and then IT, Pat Srisukwatana. I've got to spell that for you. Let me pull it, it's in here. Now, to the extent the servers are centrally stored so then the county helps us with those searches, but Pat, which – where is the CAFR?</p> <p>Q It's Exhibit 3.</p> <p>A It was way on the bottom.</p> <p>MR. BARENBAUM: Right there.</p> <p>THE WITNESS: I got it. The org chart. I'm turning to the org chart in Number 3, because his name is Thanaphat. So T-H-A-N-A-P-H-A-T, Pat, Srisukwatana, which is S-R-I-S-U-K-W-A-T-A-N-A. All that is is to say he's our IT person in the IT section to help coordinate the searches. [192:7-193:1]</p>

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	<p>Q The court reporter has handed you a document labeled FCERA-26. Please take a moment to review this document.</p> <p>A There's the names. I know this one so I'm good. I found my section, I'm ready.</p> <p>Q And do you recognize this document?</p> <p>A Yes.</p> <p>Q What is it?</p> <p>A Well, it's the P26, but it's the plaintiffs' federal – I don't know how to do that, but the initial disclosures. It summarizes Section 26A1 initial disclosures.</p> <p>Q Was FCERA involved in the preparation of this document?</p> <p>A We gave some of the names, yes. [195:11-196:1]</p>
Plaintiff's FX Transactions	<p>Q Who decided – during the period of 2007 to 2013, who decided how much of FCERA's international equity portfolio was hedged through the use of FX forwards?</p> <p>MR. BARENBAUM: Objection, misstates prior testimony.</p> <p>THE WITNESS: The investment managers determine how much within their guidelines. It's generally a not to exceed.</p> <p>BY MS. BARONE:</p> <p>Q So the board doesn't set the policy as to how much to hedge?</p> <p>A The board sets the maximum in the guidelines and it's up to the manager whether to exercise that aspect of its discretion, so there's many ways to invest. And this is at the discretion of the manager, but the board sets the policy as far as maximums, as far as a max. Like I don't know if this is the maximum exposure that the managers could have taken, but that's the amount that they took.</p> <p>Q Okay, so I think I understand, but just to be clear, does the board set how much of FCERA's international equity portfolio is hedged through the use of FX forwards?</p> <p>A They set usually in the guidelines a maximum of a particular type of forward or type of investment can be used. So the maximum, not a minimum or a specific amount, it just sets maximums.</p> <p>Q Okay.</p> <p>A Like I said, not to exceed. [71:22-73:17]</p>

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**Deposition of James Cleary – Former Administrator for Plaintiff
Haverhill Retirement System – Exhibit 103**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Do you know who the defendants are in this suit?</p> <p>A. Yes.</p> <p>Q. Who are they?</p> <p>A. Well, Credit Suisse.</p> <p>Q. Any others?</p> <p>A. J.P. Morgan, Citibank, RMB, most of the major banks. They're all listed in the complaint. UBS. [129:20-130:3]</p>
	<p>Q Do you know what an FX spot transaction is?</p> <p>A. Yes.</p> <p>Q. What is it?</p> <p>A. A spot transaction is where you have a currency exchange, and you have a situation where there are a bid and an ask in terms of the currency for somebody making a purchase, and the spot transaction has to do with at what time that the – the transfer of the currency exchange takes place, so that you might have somebody who is dealing in dollars but needs to now deal in Euros, so we're change from dollars to Euros or maybe to Indian Rubies or something like that, the Japanese Yen. And so you've got to switch from one currency to another. [49:24-50:16]</p>
	<p>Q. Do you know what a bid-ask spread is?</p> <p>A. Vaguely, yes.</p> <p>Q. What is it?</p> <p>A. A bid is what's offered for a currency exchange, what you're asking, and the ask is what somebody is willing to purchase it at, and a spread is the difference between the bid and the ask.</p> <p>Q. Is the Retirement System claiming damages for spreads related to FX transactions?</p> <p>A. Yes.</p> <p>Q. Is your claim that spreads on all FX spot trades in every currency pair were larger than they should have been, absent the alleged conspiracy?</p> <p>A. The Retirement Board is seeking damages for losses caused by manipulated spreads for the currency manipulation and anything that the Retirement Board may have had investments in. [117:5-13]</p>

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Plaintiff's Knowledge of Role as Class Representative	<p>Q. And are you aware that there are two classes in this lawsuit?</p> <p>A. Yes</p> <p>Q. What are the two classes?</p> <p>A. Well, we're the OTC class.</p> <p>Q. What does that mean?</p> <p>A. Over the counter. [128:23-129:19]</p>
Plaintiff's Involvement in the Case	<p>A. Yes. So I am not in the office on a regular basis with the staff. We meet once a month or other times, as needed, usually in a conference room. The executive director, who -- we have a new one, only two months in. Prior to that was Sheryl Trezise, who had also been an executive director of another retirement fund in the state. And prior to Sheryl, we had Kathy Gallant. So as I said, that was the go-to person. So in this particular case, for the request for the documents, I know for a fact that Don drove to Haverhill, Mass, and went through, as I said, a multitude of file cabinets with all of the different companies we have to produce whatever the documents were that were requested by defendants' counsel. But as to be -- my being personally there when the documents were gone through and reviewed, no, I wasn't personally there. I was in my other office, doing my own work. That's how the documents were produced. I might also add it's not a big office, geographically, physically. There are the executive director and three other women. The space is a little bit bigger than this room. But it's not an extended office with multiple side offices and corridors and things like that. It's located in what's City Hall for the City of Haverhill, which was formerly the high school, and was renovated to accommodate, in this case, the Retirement Board. So they are kind of all there together. So the documents that were produced were all produced with the assistance, I believe, of Sheryl, who was our executive director at the time, replacing Kathy, who retired. And she had extensive background. She worked for Mass Water Resources Authority as their executive director, and we were lucky enough to lure her to replace Kathy Gallant. So --</p> <p>Q. And, Mr. Cleary, is there any reason for you to believe that Haverhill didn't produce documents that were requested by the defendants in this case?</p> <p>A. No. Absolutely not. [130-133:1]</p>

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Plaintiff's FX Transactions	<p>Q. So by that, do you mean that the outside investment advisors set investment strategy?</p> <p>A. There are contracts with the investment companies that we do business with, and the strategies are those set by the companies.</p> <p>Q. Does the board provide input into what that investment strategy should be?</p> <p>A. The -- the guidelines, like, for example, large cap, small cap, growth funds, things like that, are all set, I believe, for those companies. We don't get into the day-to-day dictation to any company of what they do or do not invest in as long as they meet the guidelines that we've established in our contract with them. We engaged outside companies to do investments on our behalf, and some of those companies in part of doing that would be dealing with FX foreign exchange. [36:2-20]</p>
	<p>Q. How does foreign exchange trading fit within the retirement system's investment strategy?</p> <p>A. The investment strategy is with each individual company that we retain, and then they have their own strategies that we work with those companies. So it's not that we are dictating to the companies. 35:18-36:1.</p>

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**Deposition of John Kelly – Investment Analyst for
Plaintiff State-Boston Retirement System – Exhibit 104**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. And what is this lawsuit about?</p> <p>A. This lawsuit is about 17 major banks manipulating the price of FX closing rates, benchmark rate. As a result of that, the plaintiffs were damaged financially by not receiving the best price executed in the market. What they were receiving was whatever was decided by this group of traders at these banks that was in their best interests. Thus, there was damage done financially to the plaintiffs. [11:22-12:6]</p>
	<p>Q. And can you list the defendants?</p> <p>A. The defendants include Goldman Sachs, RBS, JP Morgan, Bank of America, Mitsubishi Bank of Tokyo, UBS. I believe most have settled, but unfortunately Credit Suisse has not yet. [12:12-16]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups or classes of plaintiffs in this lawsuit?</p> <p>A. I do.</p> <p>Q. And do you know which group BRS is in?</p> <p>A. Yes. We are the OTC group. [12:07-11]</p>
Plaintiff's Involvement in the Case	<p>Q. And who at BRS decided to bring the lawsuit?</p> <p>A. The executive officer, Timothy J. Smyth. [193:9-11]</p>
	<p>Q. Okay. And what is your involvement in the litigation?</p> <p>A. So as the investment analyst, I had the most experience in the actions in dealing with the investment managers. So I was responsible for being briefed by Labaton, helping provide the documents that were requested, reviewing the updates that Labaton provides on the case, and now as – since we were chosen as a lead, really making sure that the case is being pursued with the best interest of all of our fellow plaintiffs. [193:12-23]</p>
	<p>Q. Has BRS ever circulated a hold notice, something telling employees to preserve all documents related to this case?</p> <p>A. Yes, and the investment managers.</p> <p>Q. Do you know when that was?</p> <p>A. I don't know off the top of my head.</p> <p>Q. Okay. Are you aware of whether any documents relating to this case were ever destroyed?</p> <p>A. I am not aware of any being destroyed. [208:13-22]</p>
Plaintiff's FX Transactions	<p>Q. So the decision of when and how much to hedge would depend on the currency?</p> <p>A. It's solely at the discretion of the manager. [38:20-23]</p>

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	<p>Q. Did you search any files?</p> <p>A. Oh, yes. Yes.</p> <p>Q. And emails were searched?</p> <p>A. And what?</p> <p>Q. Emails as well?</p> <p>A. Yes.</p> <p>Q. Were non-email electronic files searched?</p> <p>A. Yes.</p> <p>Q. Were any systems used to keep track of financial transactions searched?</p> <p>A. Yes.</p> <p>Q. Centralized servers?</p> <p>A. Yes.</p> <p>Q. Desktop hard drives?</p> <p>A. Yes.</p> <p>Q. Laptop hard drives?</p> <p>A. I don't use a laptop. So – if we had them, I'm sure they were searched.</p> <p>Q. Have there been any major changes to Oklahoma Firefighters' IT systems since the time period relevant to this case?</p> <p>A. IT systems change all the time. I mean, it's kind of the nature of the beast. So I guess I would say yes. But nothing specific as to FX – y'all's request for production, no.</p> <p>Q. You mentioned that emails were searched. Whose emails?</p> <p>A. Well, mine sure were, and I'm assuming define Michael's was and Chase Rankin's were and Terri Williams' were. It's very possible they checked all our employees rather than, you know, whether they were involved in investments or not. I mean, once you start checking, you can just do them all. But I wasn't directly supervising, so I don't know. I delegated that to Duane Michael to handle that.</p>

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**Deposition of Geoff E. Varga (Managing Director of Duff & Phelps, Liquidator for
Plaintiff Tiberius OC Fund Limited – Exhibit 105)**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Can you tell me what this lawsuit is about?</p> <p>A. Very high level, it's about fixing the currency.</p> <p>Q. What does that mean, "fixing the currency"?</p> <p>A. Well, in terms of the actual rates, there was a conspiracy amongst the various banks, predominantly the large name banks that are out there, in terms of fixing the bid/asked spread on the close of the currency and potentially throughout the day. [60:13-24]</p>
	<p>Q. Who are the defendants in the suit?</p> <p>A. A number of the large banks.</p> <p>Q. Can you name any specifically?</p> <p>A. Your client, Morgan Stanley, Goldman Sachs, I believe Barclays, Deutsche Bank. [61:13-17]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Are you aware that there are two classes or groups of plaintiffs in this suit?</p> <p>A. That's my understanding, yes.</p> <p>Q. Which one is Tiberius?</p> <p>A. Traded over the counter.</p> <p>Q. What does that refer to?</p> <p>A. That you're predominantly – again, not being an FX trader, but you're trading more at the spot rate. So you're looking for rates at the close of the day as opposed to a long-term-type trading strategy, as I guess a currency speculator. [60:25-61:12].</p>
	<p>Q. And you said you were part of the OTC group. What's the OTC Group?</p> <p>A. The OTC group is a group that – basically, it's related to the types of trades we made, and we're grouped like that. I mean, there's many defendants in different situations. And we're in the – we're in the group where the trades were OTC. [12:20-13:4]</p>
Plaintiff's Involvement in the Case	<p>Q. Who elected to bring these claims on behalf of Tiberius?</p> <p>A. Myself as liquidator. [62:16-18]</p>
	<p>Q. What steps, if any, were taken by Tiberius to collect and produce documents in this case?</p> <p>A. Again, it was the documents that we had in our possession. In order for the production, we were given sort of keyword searches by counsel to run through our system. [74:14-20]</p>

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	<p>Q. Whose files were searched?</p> <p>A. The documents that were in our possession and control, so, I mean, both e-mails that we as liquidators have or generated and any information that we had retrieved over the life of the liquidation.</p> <p>Q. So the e-mails of you and the other members of your team handling Tiberius's liquidation, those e-mails were searched?</p> <p>A. That's my understanding, yes.</p> <p>Q. Any desktop hard drives searched?</p> <p>A. Of?</p> <p>Q. Of either Duff & Phelps employees or other Tiberius service providers.</p> <p>A. Again, we used the information that was in our possession, which we have centralized servers for all our e-mails. So it would have been everything there. And then we have a server 3 that we store client files on, so that Tiberius-related documents on there would have been searched as well.</p> <p>Q. But you have no files that are on your desktop hard drive off of the server?</p> <p>A. I don't think many people keep those or, if we do, the technology we have now kind of replicates back into the server itself.</p> <p>Q. Paper files were searched?</p> <p>A. Presumably to the extent we have many that aren't just printouts of electronic files we receive. [75:9-76:14]</p>
Plaintiff's FX Transactions	<p>Q. Can you tell me what this document is?</p> <p>A. My understanding is it's historical download of trades that, again, Tiberius would have done in converting currencies or - - again, this one, depending on the document, they all seem to say FX forwards predominantly if not exclusively. [46:8-14]</p>

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**Deposition of Regina Reardon – Former President of Plaintiff United Food and
Commercial Workers Union and Participating Food Industry
Employers Tri-State Pension Fund – Exhibit 106**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. And do you have a general understanding about what this lawsuit is about?</p> <p>A. Yes.</p> <p>Q. And what's your understanding?</p> <p>A. My understanding is that it's a Class Action in which the plaintiffs seek to recover damages as a result of the defendants' agreement to manipulate the foreign exchange market to their benefit. [12:11-20]</p>
	<p>Q. Okay. And do you know generally who the defendants are in this litigation?</p> <p>A. I know some – some of the names.</p> <p>Q. Okay. Can you just describe, are type of entity or –</p> <p>A. Very large banks for the most part.</p> <p>Q. Okay. And you understand Credit Suisse are defendants in this litigation?</p> <p>A: Yes [13:12-22]</p>
	<p>Q. Do you know whether UFCW is claiming that all of its FX transactions executed between December 2007 and 2013 were negatively impacted by the alleged misconduct?</p> <p>MR. BOARDMAN: Object to form.</p> <p>THE WITNESS: Yeah, I – I believe we will know that as a result of the discovery process, completion of discovery in this case. [110:10-17]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. You understand that you're here to testify on behalf of UFCW as its corporate representative today?</p> <p>A. Yes.</p> <p>Q. Do you understand that UFCW is a plaintiff in this lawsuit?</p> <p>A. Yes. [12:4-10]</p>
	<p>Q. And do you understand that there are two classes of plaintiffs in this litigation?</p> <p>A. Yes.</p> <p>Q. Do you know which class UFCW is in?</p> <p>A. Yes.</p> <p>Q. Which one?</p> <p>A. The over-the-counter class. [13:5-11]</p>
Plaintiff's Involvement in the Case	<p>Q. Could you please describe UFC's general involvement in this litigation?</p> <p>A. And can you describe or explain what you mean by "involvement"?</p>

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	<p>Q. Sure. I can – I'll withdraw. I'll take it step by step. Without disclosing the contents of any conversation with counsel, how often do you speak to counsel concerning this litigation?</p> <p>A. Periodically.</p> <p>Q. How often is periodically?</p> <p>A. I – I, you know, I – I couldn't say. I mean, sometimes it's have a few conversations close together, and then not for a little while after that. I – I, you know, couldn't tell you precisely.</p> <p>Q. Understood. And again, without disclosing the content of any conversations, does counsel periodically update you on what's going on in this litigation?</p> <p>A. Yes.</p> <p>Q. Does counsel ever request input from you concerning this litigation?</p> <p>A. Certainly they did initially before the filing of the Complaint and the Third Consolidated Amended Complaint, and they give me regular reports on developments in the case and things that are happening. [108:5-109:9]</p>
	<p>Q. Are you aware that UFCW produced documents to defendants in the course of this litigation?</p> <p>A. Yes.</p> <p>Q. Do you know whether the documents UFCW produced contained records of all of the FX transactions that UFCW executed or were executed on behalf of UFCW during the period 2007 to 2013?</p> <p>A. I – I do not know. I believe we provided all the documents that we were provided by the various investment managers.</p> <p>Q. Do you know which – withdrawn. In collecting documents to produce in the course of this litigation, UFCW reached out to its investment managers; is that correct?</p> <p>A. No. I believe we provided the records that were in the Funds' files. I don't believe we sought additional records.</p> <p>Q. So you're saying you provided what you already had?</p> <p>A. Yes.</p> <p>Q. You did not reach out separately to the investment managers?</p> <p>A. Yeah, I don't recall at this – at this moment doing that.</p> <p>Q. Okay.</p> <p>A. I believe we've provided with the custodian of the Funds' records and – and I believe we've provided UFCW records. [110:25-111:11]</p>
Plaintiff's FX Transactions	<p>Q. Outside of engaging in FX spot and outright forward transactions with Credit Suisse, do you know if UFC had any other relationship with Credit Suisse?</p>

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	<p>A. The same situation as with Bank of America for Credit Suisse and -- and all of these.</p> <p>Q. Do you know whether UFCW had any other business relationship with Morgan Stanley?</p> <p>A. Well, we -- the investment consultants are employed by Morgan Stanley, so we do have that relationship with Morgan Stanley through -- through the relationship with the investment consultants. [115:11-25]</p>
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**Deposition of Rafael Marcos Villegas Sancliment – Treasurer and Director
of Plaintiff Systrax Corporation – Exhibit 107**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. In your own words what is this lawsuit about?</p> <p>A. The defendants, Credit Suisse and the other major banks, because of their position in the marketplace were able to manage/manipulate the price of foreign exchange and we – myself and other people trading these markets got damaged by their behavior. [16: 1-16].</p>
	<p>Q. Who are the defendants?</p> <p>A. Well, it's the major banks or Goldman [Sachs], JPMorgan, Credit Suisse, Royal Bank of Scotland, Barclays, HSBC, you have a bank in Tokyo, Morgan Stanley. There's a few others. I can't remember them all at this point.</p> <p>Q. Why is Systrax suing Credit Suisse?</p> <p>A. Systrax is not suing only Credit Suisse, it's suing all the major banks that participate in this unlawful behavior. [16: 7-16]</p>
	<p>Q. Were spreads on spot trades in all currency pairs larger than they should have been absent the alleged conspiracy?</p> <p>A. It would be – it would be my opinion again. Am I – should I be giving my opinion?</p> <p>A: In my opinion if – if banking institutions weren't manipulating the market, we would have gotten better fills or better pricing on the currency pairs.</p> <p>Q. How were Systrax's accounts affected by the alleged manipulation?</p> <p>A. Well, we made less money or we lost more money in certain trades because of this manipulation. We traded times that maybe we shouldn't have traded based on false market indicators.</p> <p>Q. What do you mean you traded in times when you shouldn't have traded?</p> <p>A. Yeah. For example, if the market was moved in a certain direction, we might have gotten – the system might have said, hey, go buy and sell this currency pair when that wasn't an organic or natural movement of the market but it was just an artificial movement and then what happened is that we got damaged by that movement.</p> <p>Q. Do the documents that you've produced contain records of all the FX instruments transactions you believe were harmed by the conduct alleged in the Complaint?</p> <p>A. I only provided those that relate to Systrax but, of course, this manipulation affected many other people that have other</p>

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	<p>transactions, other records.</p> <p>Q. Did the documents that you produced contain records of all the FX instrument transactions of Systrax that you believe were harmed by the conduct alleged in the Complaint?</p> <p>A. That affected Systrax? Yes.</p> <p>Q. Were all of Systrax's FX trades negatively by the alleged conspiracy?</p> <p>A. I couldn't answer that. The experts have to look into the detail and determine that. [202:3-203:25]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups or classes of plaintiffs in this lawsuit?</p> <p>A. Yes.</p> <p>Q. Do you know which group or class Systrax is in?</p> <p>A. Both. [15:21-25]</p>
	<p>Q. And you said you were part of the OTC group. What's the OTC Group?</p> <p>A. The OTC group is a group that – basically, it's related to the types of trades we made, and we're grouped like that. I mean, there's many defendants in different situations. And we're in the – we're in the group where the trades were OTC. [12:20-13:4]</p>
Plaintiff's Involvement in the Case	<p>Q. Can you describe Systrax's involvement in this litigation?</p> <p>A. I'm here representing Systrax in the over the counter and exchange-traded complaints representing myself and the class of both of these types of trades against major banks and financial institutions that in our opinion manipulated markets in their benefit damaging me, Systrax and the rest of the people in the class. [200:7-17]</p>
	<p>Q. Can you describe your involvement in the litigation?</p> <p>A. Well, I'm a plaintiff. I represent both classes and I consult with Adam and Joe for this on a continuous basis. I participate in the editing – making some suggestions of the Complaint. I signed the retainer, provided all the documentation as I was ordered by the Court. Provided it.</p> <p>Q. How often do you speak to counsel?</p> <p>A. I would say – well, on – if we say about the average – all this time I would say a couple times a month but sometimes we are more – you know, more in contact depending on the circumstance of the case. [17:3-13]</p>
	<p>Q. How did you go about gathering this information?</p> <p>A. I had to gather the physical records – that means the actual statements that I got from the brokerage houses physically because some were in different locations in Argentina, some were in Mexico. I put them – we gathered them and then they</p>

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	<p>were sent to – to our – to my lawyers and the electronic stuff they hired a computer expert and he remotely connected – they sent me some kind of device and they connected remotely and they made a backup of the computer where the information was located and took it. [106:16-107:2]</p>
	<p>Q. Do the documents that you've produced contain records of all the FX instruments transactions you believe were harmed by the conduct alleged in the Complaint? A. I only provided those that relate to Systrax but, of course, this manipulation affected many other people that have other transactions, other records. Q. Did the documents that you produced contain records of all the FX instrument transactions of Systrax that you believe were harmed by the conduct alleged in the Complaint? A. That affected Systrax? Yes. [203:10-21]</p>
	<p>Q. Was anyone besides you and your attorneys involved in the document collection? A. Manuel helped me. He had some of the hard copies so he was the one that facilitated me gathering the ones that were in Argentina. Q. Aside from account statements, did Manuel have any other hard-copy files? A. No. Q. When did you begin the document-collection efforts? A. When I received the – when I received instruction from my attorney that I had to do that. Q. The computer that was originally searched, have the files on that been preserved? A. Yes. [208:1-25]</p>
Plaintiff's FX Transactions	<p>Q. Did you trade in spot FX? A. Yes, when we traded – if we wanted to convert say a million dollars of – of dollars into say the Swiss francs, you would be – you would be trading at the spot to do that conversion. Q. Why might you trade in spot FX? A. Because maybe we didn't want to have the money in dollars anymore and you want to convert to Swiss francs or maybe I had a balance in Canadian dollars because I had a – because I had to have collateral margin for trades in say Canadian exchange to trade some of the Canadian markets and then I need to convert that balance because I wasn't going to use it back into dollars so there was a spot transaction. Q. Did you trade in FX forwards? A. Yes, over-the-counter trades.</p>

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	<p>Q. What was the purpose of those trades? A. Speculation or hedging. Q. Did you trade in FX swaps? A. No. Q. Did you trade in FX options? A. No. Q. FX futures? A. Yes. Q. Did you trade in FX options on futures? A. No. [41:9-25]</p>
	<p>Q. Were both of the accounts involved in FX futures trading? A. Futures. Futures only happen in the U.S. so only the account in the U.S. was used for futures. Q. So the UBS account did not trade in FX futures? A. No, forwards. Q. Did the UBS account trade in spot FX? A. Yes. Q. Did it trade – did the UBS account trade in forwards? A. Yes. Q. Did the UBS account trade – A. I'm sorry, you said U.S. account? Q. UBS. A. Can you repeat that again? Q. Did the UBS account trade in FX forwards? A. FX forwards, yes. Q. Did the UBS account trade in any other FX instruments? A. Spot. Q. But nothing beyond spot and forwards? A. Correct. Q. Which types of FX instruments did the MFGlobal, LMG and Man Financial account trade in? A. Instruments, futures and British pound, Australian dollar or Canadian dollar, euro, yen, dollar index. Q. Did the U.S. account – Man Financial, LFG, MF Global – trade in spot FX? A. Sometimes to convert balances that were remaining in some other currency that wasn't U.S. dollars. Q. Did the U.S. account trade in FX forwards? A. No. Q. Did the U.S. account trade in any other FX instruments besides FX forwards and FX futures? A. Can you repeat that? Q. Yeah. Did the U.S. account trade in any FX instruments besides FX spot and FX futures?</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	A. No. [45:1-46:15]

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Deposition of Plaintiff J. Paul Antonello – Exhibit 108

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	Q. What is this lawsuit about? A. Manipulation of the markets. [9:7-8]
	Q. Who are the defendants? A. I think there are 15 different banks. I'm not -- I guess yourself, Credit Suisse, Goldman Sachs, Bank of America, Deutsche. I don't know. There's a few more. I don't know all of them offhand. [9:9-13]
Plaintiff's Knowledge of Role as Class Representative	Q. Do you understand that there are two groups or classes of plaintiffs in this suit? A. Yes. Q. Do you know which group or class you are in? A. I am in the Commodity Exchange Act class. [9:2-6]
	Q. Why are you suing Credit Suisse? A. To represent the class. [9:14-15]
Plaintiff's Involvement in the Case	Q. Do you meet with counsel regularly? A. I speak with Lindsey and Nathaniel, yes. Q. Do you speak with them in person or over the phone? A. Mostly over the phone. Q. How often would you say you speak to them on the phone? A. I don't really keep tabs on it, so I don't recall. Q. Every few weeks, would you say? A. That seems accurate. Q. And how often do you meet with them in person? A. Probably five or six times. Q. And how long do those meetings generally last? A. I don't recall. Q. What does your present involvement in the litigation consist of, as a named plaintiff? *** A: Okay. It is to be part of the Commodities Act for the – for the case. [10:1-15; 15:18-19; 16:7-8]
	Q. Can you tell me the steps you have taken as far as documents or production or discovery in this litigation. A. Yes. I got my statements from 2007 to 2010 and brought them to the office here. Q. Where were those statements located? A. My clearinghouse at the Exchange. *** Q. What files did you search to collect documents for production in discovery in this litigation? A. Trading statements. Q. Did you search any e-mails?

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	<p>A. No.</p> <p>Q. Did you search any non-e-mail electronic files?</p> <p>A. Huh-uh.</p> <p>Q. What systems did you use to keep track of financial transactions?</p> <p>A. What systems? Can you explain?</p> <p>Q. If you had any internal systems, or you mentioned that your clearinghouse might have maintained records of your transactions.</p> <p>A. I don't know what systems they used. I mean, the Exchange probably had something. We would get a physical statement daily and then monthly.</p> <p>Q. Okay. A physical statement or an e-mail statement?</p> <p>A. Physical for most – yeah. It would be at the desk.</p> <p>Q. Did you check any centralized servers?</p> <p>A. No.</p> <p>Q. Any desktop hard drives?</p> <p>A. No.</p> <p>Q. Any laptop hard drives?</p> <p>A. No. The clearinghouse provided me the documentation.</p> <p>Q. And you mentioned you collected paper files?</p> <p>A. Yes.</p> <p>Q. Who, aside from yourself, has been involved in the document collection efforts?</p> <p>A. My agent on the floor, which would be Shepard International. That was our clearinghouse. And FCStone is their . . .</p> <p>Q. When did these efforts start, the document collection efforts?</p> <p>A. When I hired Michael Criden, 2015.</p> <p>Q. Mr. Antonello, before we went on the break, we talked about your document collection production. And I just wanted to follow up on some of those questions. So other than your monthly account statements, did you receive any electronic records from FCStone or Shepard?</p> <p>A. No.</p> <p>Q. Did you maintain any FX-related files other than your account statements electronically?</p> <p>A. No. [21:7-23:4; 90:22-91:6]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's FX Transactions	<p>Q. What types of investments did you make during the class period?</p> <p>A. That seems very vague.</p> <p>Q. Did you invest in equities?</p> <p>A. There were probably a few equity futures trades, yeah.</p> <p>Not many, though. My primary was currencies. [30:19-25]</p>

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Deposition of Plaintiff Marc G. Federighi – Exhibit 109

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Do you have a general understanding of what this lawsuit is about?</p> <p>A. Correct.</p> <p>Q. Would you mind describing that to me, please?</p> <p>A. General is collusion between major banks about the FX market.</p> <p>Q. And this is a class action lawsuit?</p> <p>A. Correct.</p> <p>Q. What do you understand that to mean?</p> <p>A. That there's a lawsuit that's pending against the banks. That many people were hurt by the banks. [14:8-20]</p>
	<p>Q. Okay. And do you know who the defendants are?</p> <p>A. Yes, Credit Suisse.</p> <p>Q. Any other defendants?</p> <p>A. And just 16 major banks, Credit Suisse being one of the major players. [17:10-15]</p>
	<p>Q. Okay. And why are you suing Credit Suisse?</p> <p>A. I'm suing them all because I feel we've been harmed by them all.</p> <p>Q. Uh-huh. When you say you've been harmed, how – how do you feel you've been harmed?</p> <p>A. Well, I feel that is an injustice, what's been done, front running orders and stuff. I feel that's illegal. [17:16-23]</p>
Plaintiff's Involvement in the Case	<p>Q. So initially when you got this request, you had to go through the records that you maintained?</p> <p>A. Oh, I – my records?</p> <p>Q. Yes.</p> <p>A. Okay. That was totally different than what you asked. If you could rephrase it for me, I – I'd appreciate it.</p> <p>Q. Sure.</p> <p>A. Can you rephrase the question to me.</p> <p>Q. Yes. How do you maintain all of your trading records that were –</p> <p>A. I kept my trading records on paper and on electronic.</p> <p>Q. Okay.</p> <p>A. So I had electronic and my own papers that I kept in boxes, you know, as such.</p> <p>Q. Okay. And so what steps did you take to collect those? Did you just sort of search them manually or what did you do?</p> <p>A. We – we had to physically go and search them out in storage facilities. I had them stored, and I had them stored on</p>

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	computers, so I extracted them from the computers. [10:14-11:12]
Plaintiff's FX Transactions	<p>Q. Within the FX market, were the Euro and yen currencies correlated?</p> <p>A. I traded straight – pretty much straight futures. So I wasn't trying to look for the correlation between them. I'm sure there was a correlation.</p> <p>Q. Is there any particular reason you chose to only do straight futures in the FX market?</p> <p>A. Typically, that's the way I was brought up, so you don't deviate from trading futures to start doing spreads. [104:23-105:11]</p>
	<p>Q. And during this 12 years, was it mostly FX trading that you were doing?</p> <p>A. No, I was doing a lot of eurodollar trading then.</p> <p>Q. Okay. So what percentage would you say was FX trading?</p> <p>A. A small, small percentage. [84:1-7]</p>

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Deposition of Plaintiff Thomas Gramatis – Exhibit 110

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Can you tell me the allegations in this lawsuit?</p> <p>MR. KANNER: Object to the form of the question. You can explain what you understand the case to be. If that's what you're asking him for?</p> <p>MS. KRAMER: Yes.</p> <p>THE WITNESS: It's my understanding there was price fixing going on in the euro currency. [119:10-19]</p>
	<p>Q. Do you know who the defendants in this litigation are?</p> <p>A. I do.</p> <p>Q. Who are they?</p> <p>A. All the major banks, including Credit Suisse. [119:4-9]</p>
	<p>Q. Why do you think the defendants directly manipulated the exchange market?</p> <p>MR. KANNER: Same objection. It sounds like – never mind. Go ahead. The same instruction applies.</p> <p>THE WITNESS: There were private conversations in chat rooms about the manipulation and the rigging of the market. [121:6-13]</p>
	<p>Q. Is it your claim that defendants directly manipulated the exchange market?</p> <p>A. It is. [119:24-120:1]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you know what the two groups are?</p> <p>A. I do.</p> <p>Q. What are they?</p> <p>A. The over-the-counter and the exchange class.</p> <p>Q. And which one are you a part of?</p> <p>A. The exchange. [117:3-9]</p>
	<p>Q. Why did you decide to become part of this lawsuit?</p> <p>A. Because I trade euro currency, and I believe that I am part of this claim. [121:21-24]</p>
	<p>Q. What did you understand your responsibility to be as a named plaintiff?</p> <p>A. I'm supposed to follow the case – follow the case, act in the best interest that I can as that person, cooperate and testify, if I have to. [117:13-17]</p>

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	<p>Q. Did you provide information to your counsel for the purposes of drafting this complaint?</p> <p>A. I spoke with my counsel.</p> <p>Q. Did you provide them information?</p> <p>MR. KANNER: To be clear, you can answer the question to the – you can answer yes or no whether you provided information, but the substance of that information would be protected by the privilege. So please answer it accordingly.</p> <p>THE WITNESS: Yes. [128:3-13]</p>
	<p>Q. Is it your claim that your – that options on FX euro contracts were impacted by the alleged manipulation?</p> <p>A. I believe anything that I traded FX was manipulated. [129:3-7]</p>
Plaintiff's Involvement in the Case	<p>Q. Were you ever told to preserve all documents relating to this case?</p> <p>A. Was I ever told? Yeah. I'm sure I was told to turn over everything that I had.</p> <p>Q. Were you ever told to maintain all documents? Do not delete any documents?</p> <p>A. Yeah. I've never deleted anything. [133:12-18]</p>
	<p>Q. Was anyone else besides you involved in giving documents to counsel?</p> <p>A. No. I gave them my computers.</p> <p>Q. More than one computer?</p> <p>A. Yes.</p> <p>Q. How many computers do you have?</p> <p>A. We took information off of three computers.</p> <p>Q. Did you instruct counsel on where to find documents relating to your FX trading?</p> <p>A. No. They just took the computers and did whatever was needed for the information as far as trading. That's my –</p> <p>Q. Did you use any other computers besides the three you provided to counsel between 2007 and 2013?</p> <p>A. Not to my knowledge. [132:20-133:11]</p>
Plaintiff's FX Transactions	<p>Q. So you mentioned that you were a market maker for a few currencies. Can you repeat what those currencies were?</p> <p>A. Japanese yen, Mexican peso, euro FX.</p> <p>Q. Are those the only currencies that you made markets in?</p> <p>A. Foreign exchange currencies, yes. [18:4-10]</p>
	<p>Q. Did you trade futures? Did you trade forwards? Did you trade swaps?</p> <p>A. I traded futures, some options.</p> <p>Q. Did you trade anything else?</p> <p>A. Spreads. [26:9-13]</p>

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	<p>Q. So we discussed the currencies that you made markets in.</p> <p>A. Yes.</p> <p>Q. Can you repeat the – can you tell me what futures you invested in within those markets? I know you said all of them, but can you repeat which ones those were?</p> <p>A. So you want me to tell you all the markets I traded in again?</p> <p>Q. Of currencies.</p> <p>A. I believe the Swiss – I mean, the Japanese yen, the Mexican peso and the euro FX.</p> <p>Q. Did you trade options in the Japanese yen, the Mexican peso and the euro FX?</p> <p>A. I believe so.</p> <p>Q. Did you trade spreads in the Japanese yen, the Mexican peso and the euro FX?</p> <p>MR. KANNER: Object to the form.</p> <p>THE WITNESS: I believe so. [28:11-29:4]</p>

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Deposition of Plaintiff Doug Harvey – Exhibit 111

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	Q. What is this lawsuit about? A. It is about the fixing of the FX markets. [9:10-12]
	Q. And who are the defendants? A. A number of banks. Just a couple, Credit Suisse, JPMorgan Chase, UBS, among others. [9:13-15]
	Q. Is it your claim that FX fixes during 2007 to 2013 were manipulated by the alleged conspirators? A. Yes. Q. Is it your claim that spreads on FX transactions affected -- were affected by the alleged manipulation? THE WITNESS: Yes. [127:5-18]
	Q. Is it your claim that FX futures and options on FX futures were affected by the alleged manipulation? THE WITNESS: Yes. [130:3-10]
	Q. Your complaint makes allegations about whether FX fix and spreads were manipulated between 2007 and 2013. When I ask you questions today I'll be focusing on that time period unless I identify a different time period. Do you understand that? A. Yes. Q. When did you first learn of the alleged manipulation? A. I believe it was 2013 when an article in Bloomberg came out about it. Q. The article in Bloomberg is how you learned about the alleged manipulation? A. Yes. [11:2-15]
	Q. What are FX futures? A. It is a derivative of the spot market and the -- basically the swap of U.S. dollar versus the Canadian dollar or Australian dollar. Q. What do you mean by a derivative of the spot market? A. Well, they're all related. The spot market is the cash market. Cash market influences the options and futures market. If they weren't paired one to one, then there would be incredible arbitrage opportunities and there wouldn't be -- you know, that market wouldn't exist. [29:21-30:9]
Plaintiff's Knowledge of Role as Class Representative	Q. Are you a named plaintiff in this litigation? A. Yes. Q. And as a named plaintiff in this litigation, is it your responsibility to monitor your own counsel? A. Yes. [117:3-9]

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	<p>Q. Do you know which group or class you are in?</p> <p>A. Yes. [9:7-9]</p>
	<p>Q. What group or class are you in?</p> <p>A. I am the shareholder class. The exchange class. I apologize. [9:16-18]</p>
Plaintiff's Involvement in the Case	<p>Q. Sure. Just describe your involvement in the litigation.</p> <p>A. Since I knew about the litigation, I reached out to my attorney. And I realized there's – not opportunity, but I realized that I had been, you know, involved more than likely with some of these trades that these guys participated in. [10:12-19]</p>
	<p>Q. Can you tell me the steps that you have taken to collect documents for production in discovery in this litigation?</p> <p>A. My attorney, John Radice, came to my condo in Chicago and they swepted every computer that I owned.</p> <p>Q. What files were searched?</p> <p>THE WITNESS: My – they swepted my entire – they took everything from all of my computers that I owned. [14:25-15:12]</p>
	<p>Q: Were there any paper files that were collected as part of the document collection?</p> <p>A. No.</p> <p>Q. Has anyone besides yourself been involved in document collection efforts besides yourself and your attorneys?</p> <p>A. No.</p> <p>Q. When did these document collection efforts start?</p> <p>A. I believe it was in 2014, but I don't recall an exact date. [16:24-17:10]</p>
Plaintiff's FX Transactions	<p>Q. Did you trade in exchange traded instruments during the class period?</p> <p>A. Yes.</p> <p>Q. Did you engage in any other trading?</p> <p>A. No.</p> <p>Q. Some of your exchange trading was in FX; is that correct?</p> <p>A. Yes. [18:3-10]</p>
	<p>Q. What types of investments did you make?</p> <p>A. I traded options and futures.</p> <p>Q. Did you ever trade in equities?</p> <p>A. No.</p> <p>Q. Did you ever trade in debt instruments?</p> <p>A. No. [22:12-19]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. So you mentioned that you were a market maker; correct?</p> <p>A. Yes.</p> <p>Q. For what FX products?</p> <p>A. Australian and Canadian dollar options.</p> <p>Q. For what exchange?</p> <p>A. The Chicago Mercantile Exchange.</p> <p>Q. Did you ever make markets on FX futures rather than options?</p> <p>A. No. [71:14-24]</p>
	<p>Q. Did you trade in any currencies other than the Canadian dollar and Australian dollar during 2007 to 2013?</p> <p>A. Yes.</p> <p>Q. What currencies?</p> <p>A. Euro currency. British pound. Japanese yen. Swiss franc. And also Canadian and Australian dollar. [124:9-17]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

Deposition of Marc Eisenberg for Plaintiff Izee Trading Company – Exhibit 112

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. What's this lawsuit about?</p> <p>A. Price manipulation by large financial entities of the foreign exchange markets and price. [18:2-5]</p>
	<p>Q. And who are the defendants in this lawsuit?</p> <p>A. I believe 13 public, large – large financial institutions.</p> <p>Q. Do you know their names?</p> <p>A. Not all of them.</p> <p>Q. Can you list the ones you do know?</p> <p>A. BNP, Paribas, Citibank, Barclays Bank. I can't recall all the names right now.</p> <p>Q. Okay. We're here representing Credit Suisse. So I guess the next question is why are you suing Credit Suisse?</p> <p>A. Because they are one of the banks in the class that manipulated prices, I believe. [18:6-19]</p>
	<p>Q. Is it your claim that FX futures and FX options were affected by the alleged manipulation of fixed rates?</p> <p>A. What's the question?</p> <p>Q. Do you claim in this litigation that futures and options in foreign exchange products were affected by the alleged manipulation of fixed rates?</p> <p>THE WITNESS: Prices were manipulated, yes.</p> <p>Q. How were your accounts affected?</p> <p>THE WITNESS: Negatively.</p> <p>Q. And how do you know?</p> <p>THE WITNESS: I lost money [136:22-137:22].</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Are you involved in this litigation as a plaintiff?</p> <p>A. Yes.</p> <p>Q. Are you a named plaintiff in this litigation?</p> <p>A. Yes. [20:9-14]</p>
	<p>Q. Do you understand that there are multiple groups or classes of plaintiffs in this lawsuit?</p> <p>A. Yes.</p> <p>Q. How many are there?</p> <p>A. Two.</p> <p>Q. And which part – which one is Izee part of?</p> <p>A. Izee is part of listed derivatives, listed futures. [17:18-18:1]</p>
Plaintiff's Involvement in the Case	<p>Q. And why did you retain the services of Mr. May? Without divulging any confidential communications with Mr. May.</p> <p>A. I wanted to receive compensation for my losses.</p> <p>Q. And that's in reference to the losses in this case?</p> <p>A. Yes. [148:16-148:23]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. So without getting into any of the substance of conversations you may have had with counsel – I don't want to ask you for privileged information – but can you describe your involvement in this litigation?</p> <p>A. Yeah. I was a market participant in the alleged violations that were occurring, and I suffered direct financial losses due to the alleged conduct. [19:25-20:8]</p>
	<p>Q. Did you have a practice of deleting e-mails from your computer?</p> <p>A. No</p> <p>Q. Did you have a practice of retaining e-mails on your computer?</p> <p>A. Yes.</p> <p>Q. What was that practice?</p> <p>A. I never deleted any e-mails. [15:19-16:1]</p>
	<p>Q. And did you keep internal records of your limit orders?</p> <p>A. During each day, I kept records of it. Not at the end of the day.</p> <p>Q. What about your stop-loss orders?</p> <p>A. During the day, I kept records of it. Not at the end of the day. [100:2-8]</p>
	<p>Q. Did Izee conduct any business using web mail addresses?</p> <p>A. I don't know what a web mail –</p> <p>Q. E-mail address.</p> <p>A. Not transactionally, no. There was commentary.</p> <p>Q. And do you recall the e-mail addresses that Izee used?</p> <p>A. I remember one of them, yes.</p> <p>Q. Which one is that?</p> <p>A. It's wakebdr@aol.com.</p> <p>Q. Was that searched for responsive documents?</p> <p>A. Yes. [16:17-17:5]</p>
Plaintiff's FX Transactions	<p>Q. So you mentioned Izee traded FX. What types of investments did Izee make?</p> <p>A. Traded in the euro currency futures at the Chicago Mercantile Exchange. [32:21-24]</p>
	<p>Q. What type of hedging activities did Izee engage in?</p> <p>A. I traded derivatives of the underlying futures.</p> <p>Q. And which derivatives were those?</p> <p>A. Options. [36:4-9]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. And from 2007 to 2013, what FX instruments did Izee transact in?</p> <p>A. Primarily euro currency futures and options.</p> <p>Q. Spot trades?</p> <p>A. No spot trades.</p> <p>Q. Forwards?</p> <p>A. No forwards.</p> <p>Q. Any swaps?</p> <p>A. No swaps. [39:23-40:7]</p>
	<p>Q. You said you traded FX futures. Over what time period did you trade those futures? And, again, limited to within 2007 to 2013.</p> <p>A. That entire time.</p> <p>Q. Over what period of time did you trade FX options?</p> <p>A. That entire time. [42:23-43:5]</p>
	<p>Q. And did you have a currency-specific strategy?</p> <p>A. I primarily traded one currency.</p> <p>Q. And which currency was that?</p> <p>A. The euro currency, euro versus the U.S. [50:5-9]</p>
	<p>Q. Did you trade FX options on futures over exchanges</p> <p>A. Yes.</p> <p>Q. Which exchanges did you use for FX – foreign exchange trading?</p> <p>A. CME, Chicago Mercantile Exchange. [55:11-16]</p>
	<p>Q. Mr. Eisenberg, did you speculate in foreign exchange instruments?</p> <p>A. Yes.</p> <p>Q. In what type of foreign exchange instruments did you speculate?</p> <p>A. Euro currency futures, euro currency options. [103:25-104:6]</p>
	<p>Q. For which FX products did you provide services as a market maker?</p> <p>A. The euro currency futures, euro currency options.</p> <p>Q. And which exchange did that take place on?</p> <p>A. Chicago Mercantile Exchange, the IMM division. [104:24-105:5]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q And since there was one employee and it was you, were you solely responsible for setting Izee's investment strategy?</p> <p>A. Yes.</p> <p>Q. Did anyone else provide input?</p> <p>A. No.</p> <p>Q. How did you develop that strategy?</p> <p>A. Over 24 years of trading experience.</p> <p>Q. Who was responsible for carrying out the investment strategy for Izee?</p> <p>A. I was. [33:10-20]</p>
	<p>Q. So, again, from 2007 to 2013, what was the approximate ratio of FX to non-FX instruments you traded? And by "you," I mean Izee.</p> <p>A. From 2007 until 2013, approximately 100 percent of my trades involved FX. [39:13-17]</p>

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Deposition of Plaintiff John Kerstein – Exhibit 113

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Can you tell me what this lawsuit is about?</p> <p>A. Price fixing between the largest banks in the world.</p> <p>Q. Price fixing of what?</p> <p>A. Foreign exchange currencies. [68:16-21]</p>
	<p>Q. Can you name the defendants in this case?</p> <p>A. All of them or most of them, Credit Suisse, Deutsche Bank, Merrill Lynch, UBS, JPMorgan, all the largest banks in the world.</p> <p>Q. Okay.</p> <p>A. Barclays. [70:4-9]</p>
	<p>Q. When did you first come to believe that you may have a claim in this litigation?</p> <p>A. When I figured out it was a rigged game, when I understood it to be a rigged game.</p> <p>Q. What do you mean by “a rigged game”?</p> <p>A. Not an even playing field. [68:22-69:2]</p>
	<p>Q. You stated that you became aware of your claims in this litigation when you figured out that it was a rigged game.</p> <p>A. Yes.</p> <p>Q. And I asked what did you mean by a rigged game; you said not an even playing field. And my question was why you believed the playing field is not even.</p> <p>A. I feel that the defendants in this case manipulated price to achieve their goal and to take advantage of whoever they could. [69:18-70:3]</p>
	<p>Q. You stated I feel that the defendants in this case manipulated price to achieve their goal and to take advantage of whoever they could. Does that include you?</p> <p>A. Yes.</p> <p>Q. Why do you believe that you personally suffered losses?</p> <p>A. I believe I was just caught up in the wash. [70:10-18]</p>
	<p>Q. Do you know if you suffered losses?</p> <p>A. Yes.</p> <p>Q. How do you know?</p> <p>A. How do I know? I just feel when the field was not – when the market wasn't trading correctly and the fact that it lost some characteristics that it normally had, it felt like there was forces beyond my control, and it didn't seem right. [71:4-11]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's Involvement in the Case	<p>Q. Did you speak to counsel about this litigation? Without revealing the substance of any conversations, I just want to know do you regularly communicate with counsel about this litigation.</p> <p>A. Yes.</p> <p>Q. How often?</p> <p>A. When pertinent information comes up, when he gets information or when I have a question about something maybe that he sent me to read or look at. [75:25-76:8]</p>
	<p>Q. Did you provide any information about your claims –</p> <p>A. All the information –</p> <p>Q. – for purposes of this Complaint?</p> <p>A. All the information I had I gave to my lawyers. [79:24-80:4]</p>
	<p>Q. Okay. Can you tell me what steps you took to collect documents for production in this litigation?</p> <p>A. I looked, tried to get documents from Cadent Financials, but they were out of business. So the next thing I did was I went to the Exchange and asked them for records that they had, and they gave me that spreadsheet. I gave my laptop computer with all my data, whatever was in there, to my lawyers. And that was everything I had.</p> <p>Q. Did you search for any hard-copy documents in either your home or your office or anywhere else?</p> <p>A. Now you have to bear with me because I'm not very good with computers. So when you say hard documents, something I downloaded or something?</p> <p>Q. Paper document.</p> <p>MR. KANNER: Paper.</p> <p>THE WITNESS: No, I looked for everything I had.</p> <p>Q. Did you search personal e-mail?</p> <p>A. I searched everything, yes.</p> <p>Q. You personally searched it, or you provided access to your e-mail for counsel to search?</p> <p>A. I provided everything I had to counsel to search. I can barely get online. [81:2-82:4]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's FX Transactions	<p>Q. No, okay. Let's focus on the foreign exchange trading. What types of FX instruments did you invest in between 2007 and 2013?</p> <p>A. Euro currency, Japanese yen, British pound.</p> <p>Q. What sort of –</p> <p>A. Futures.</p> <p>Q. – products?</p> <p>A. Futures.</p> <p>Q. Anything else?</p> <p>A. No. [35:17-36:3].</p>

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Deposition of Plaintiff Michael Melissinos – Exhibit 114

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	Q. And in your own words, what is this lawsuit about? A. This is about currency manipulation on – from the collusion from the big banks. [14:21-25]
	Q. And who are the defendants in this case? A. Just the major Wall Street banks: Credit Suisse, Goldman, J.P. Morgan, Bank of America. [15:1-5]
	Q. And when did you first learn of the alleged manipulation? A. In 2014. Q. And how did you learn of that? A. Some other traders. Q. Other traders told you? A. Other traders, and then I did my work to read articles and things like that. [16:9-17]
	Q. And why are you suing Credit Suisse? A. For – well, one, to, I guess, bring back and maintain integrity in the markets that I trade, and then also to seek any damages for the class, meaning myself and my investors, if there are any. [15:6-12]
Plaintiff's Knowledge of Role as Class Representative	Q. Do you understand that there are two groups or classes of plaintiffs in this suit? A. Yes. Q. And do you know what those classes are? A. Yes. Q. Can you tell us what they are. A. Sure. The – the first one, which I'm a part of, the exchange trade class, and the other is the OTC, over the counter. [14:9-20]
Plaintiff's Involvement in the Case	Q. And can you describe your involvement in the litigation. A. My involvement. I'm a class representative. Q. And as class representative, do you speak to counsel? A. Yes. Q. And how often do you speak to counsel? A. Lately, a lot more, but – MR. SANDLER: I'm just going to interpose not an objection here, but what counsel is asking you is how often and whether you spoke to counsel, but certainly not what was discussed. THE WITNESS: Right. A. Say, phone – between phone and in-person meetings, about a dozen times. Q. Since the litigation started? A. Yes. [15:13-16:8]

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Can you tell me what steps you have taken to collect documents to produce during discovery in this litigation.</p> <p>A. Well, I maintain all my records and emails and brokerage statements. So I have all the trade confirmations. And when the process started to collect the data off of my computer and email account, I was informed, and I had no intention of deleting anything. And so I made my entire system and all my files available to them. And then a third-party data vendor sent – was sent some sort of a device or hooked it up, and they signed in, and they mirrored my computer, and they downloaded the whole thing.</p> <p>Q. Did you have any electronic data stored on a shared server, other than your own personal server?</p> <p>A. Yes. Like a drop – Dropbox? That's all maintained on my computer.</p> <p>Q. Were there any nonelectronic files that you produced?</p> <p>A. Paper documents? I don't believe so. Every – every paper document I have is on the computer.</p> <p>Q. Have there been any changes to your IT system during the relevant time period?</p> <p>A. No.</p> <p>Q. What systems did you use to keep track of your financial transactions?</p> <p>A. Track financial – you mean did I keep a ledger or something of all of my trades?</p> <p>Q. A record of your trades.</p> <p>A. No. I did for a while, and then I stopped.</p> <p>Q. Would the records that you did create – would they have been produced?</p> <p>A. Yes.</p> <p>Q. Okay. Who was involved in the document collection process besides the third-party vendor you mentioned?</p> <p>A. My lawyers. I believe the process was initially started by Adam Frankel, who is not here, Greenwich Associates.</p> <p>Q. Do you know when those efforts started?</p> <p>A. 2014, I believe I received this request, and I don't remember, but I believe it was in 2015 when – when I received that device in the mail, and then they exported all the files.</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's FX Transactions	<p>Q. So during the relevant period, 2007 to 2013, you traded in exchange traded FX instruments?</p> <p>A. Yes.</p> <p>Q. And during that period, you traded in the currencies listed in paragraph 38?</p> <p>A. Yes.</p> <p>Q. What type of exchange-traded FX products did you trade in?</p> <p>A. What –</p> <p>Q. What types of instruments? Futures? Options?</p> <p>A. Futures.</p> <p>Q. Anything else?</p> <p>A. No.</p> <p>Q. Did you ever trade in FX swaps?</p> <p>A. No.</p> <p>Q. Did you ever trade in any over-the-counter FX instruments, such as spots or forwards?</p> <p>A. No.</p>
	<p>Q. But for now, can you just generally describe what Melissinos Trading does.</p> <p>A. Yeah. Melissinos Trading trades commodity futures, other futures markets, such as currencies, stocks and bonds. . . . [13:4-10]</p>
	<p>Q. So could you then estimate approximately what percentage of the portfolio is invested in currencies for the fund.</p> <p>A. I could say 25, 30 percent. [69:13-17]</p>

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Deposition of Plaintiff Robert Miller – Exhibit 115

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. What is this lawsuit about?</p> <p>A. The lawsuit is about price manipulation of the cash currency markets. [36:7-9]</p>
	<p>Q. And who are the defendants in this lawsuit?</p> <p>A. The defendants are a number of large banks such as Bank of America, your bank Credit Suisse, Royal Bank of Canada, Citibank, JPMorgan Chase and others. [36:10-15]</p>
	<p>Q. Are you claiming damages in this lawsuit based on trades in this account?</p> <p>A. I'm claiming damages on any trading that I did in the exchange-traded futures and currencies. [95:5-9]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups or classes of plaintiffs in this lawsuit?</p> <p>A. I do.</p> <p>Q. And which class or group are you in?</p> <p>A. I'm in the exchange class. [36:2-7]</p>
Plaintiff's Involvement in the Case	<p>Q. How often do you speak with counsel?</p> <p>A. As needed. When there is questions that they would have or on occasion when there is a question I would have, but it's just on occasion. [122:15-18]</p>
	<p>Q. How many times have you met in person with counsel since meeting them?</p> <p>A. Probably a half a dozen or more, something like that.</p> <p>Q. How long did those meetings last?</p> <p>A. Some of them were a part of the day. Some of them were an hour or two, I suppose. just don't remember, you know, specifics like that. [123:7-14]</p>
	<p>Q. What steps did you take to collect documents for production and discovery in this litigation?</p> <p>A. There was a third-party computer company that we gave access to all of our records that they could pull everything that they could find for this records submission.</p> <p>Q. What files did they search?</p> <p>A. Everything.</p> <p>Q. That includes e-mails?</p> <p>A. Yes.</p> <p>Q. How were your e-mails searched?</p> <p>A. With keyword searches by that computer company.</p> <p>Q. Whose e-mail accounts were searched?</p> <p>A. Mine. And I'm assuming – since I can't speak for them – but I'm assuming Mark's and Pete's.</p> <p>Q. Did they also search non-e-mail electronic files?</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>A. Yes.</p> <p>Q. How were those searched?</p> <p>A. The company was given authorization to search all of our files with the agreed search terms. [128:20-129:19]</p>
Plaintiff's FX Transactions	<p>Q. Okay. What types of financial instruments do you trade for yourself?</p> <p>A. Over time I've traded a lot of different – a lot of different markets. They could include corn. They could include soybeans. They could include gold, crude oil, silver. They could include treasury bonds. They could include the Swiss franc. They could include the – used to be Deutsche Mark, the Euro currency, Japanese yen, Aussie dollar, could be heating oil. It could be cattle. Could be live hogs. [22:7-17]</p>
	<p>Q. What types of FX-related instruments do you trade or did you trade – sorry – during 2007 to 2013?</p> <p>A. I trade the more popular pairs, not what we would call the exotics, which would have very low volume. I generally traded via a computer program that would seek to – that would make the trading decisions seeking to make a profit.</p> <p>Q. Did you trade FX futures contracts during 2007 to 2013 for yourself personally?</p> <p>A. You mean exchange-traded contracts?</p> <p>Q. Yes.</p> <p>A. Yes.</p> <p>Q. What about options on FX futures?</p> <p>A. Options on exchange-traded futures contracts, I may have traded some. I don't remember specifically.</p> <p>Q. Okay. And I'm just talking right now about your personal trading.</p> <p>A. Correct.</p> <p>Q. What about FX spot transactions?</p> <p>A. Those would have been done trading, as I said before, generally, with a computerized trading strategy. [37:11-38:9]</p>
	<p>Q. And for the exchange FX instruments, were you solely responsible for all trading decisions?</p> <p>A. I would make trading decisions, but I'd also have a commodity trading advisor account where they would make trading decisions.</p> <p>Q. So when you made trading decisions for the exchange transactions, were you solely responsible?</p> <p>A. For the decisions?</p> <p>Q. Yes.</p> <p>A. If it was a trade that I was making, yes. [43:25-44:9]</p>

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Deposition of Richard Preschern, Preschern Trading – Exhibit 116

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q: What is this lawsuit about?</p> <p>A: It's about the alleged manipulation of prices in the FX market globally. [12:12 – 14]</p>
	<p>Q: Can you identify who the defendants in this lawsuit are?</p> <p>A: All of them? Probably not. But I can say that they make up the majority of all the FX market participation and volume on a daily basis. In a nutshell, they are probably the largest -- some of the the largest financial institutions.</p> <p>Q: Can you name any of them?</p> <p>A: Yes.</p> <p>Q: Would you please name them.</p> <p>A: Citigroup, Credit Suisse, Bank of America, Bank of Tokyo-Mitsubishi, Deutsche Bank, Barclay's. And other than that I had have to speculate but . . . [13:14 - 14:3]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q: Do you understand that there are two groups or classes of plaintiffs in this case?</p> <p>A: I do.</p> <p>Q: Do you know which group or class you are in?</p> <p>A: Yes, the Exchange class. [13:8 -13]</p>
	<p>Q. Why are you suing Credit Suisse?</p> <p>A. Because the allegations that I have – that have been made public to me are of very serious implications for the market and for me personally, and I'm here to recover some of these damages that were done to me.</p>
Plaintiff's Involvement in the Case	<p>Q: Why did you decide to bring this lawsuit?</p> <p>A: I decided to join the lawsuit because it materially impacted me professionally and personally. [14:10 -13]</p>
	<p>Q. Who has been involved in the document collection efforts?</p> <p>A. Counsel and myself.</p> <p>Q. Was anyone else involved?</p> <p>A. No.</p> <p>Q. And when did these efforts begin?</p> <p>A. I think in 2015.</p>
	<p>Q. Can you tell me what steps you've taken to collect documents for production in discovery in this litigation?</p> <p>A. Well, I would call up the attorneys from time to time to get an update on where things are and if there is anything to do.</p> <p>Q. How did you collect the documents that you produced in this discovery – in discovery in this litigation?</p> <p>A. Well, the documents from whatever the – my counsel shared with me was shared, and the rest I looked up information general that I could find publicly.</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. I mean the documents that you produced such as your account statements.</p> <p>A. Okay. What about those?</p> <p>Q. How did you go about collecting documents such as those that you produced?</p> <p>A. Oh, I looked everywhere in my house physically, and then I looked everywhere on all of my computer databases for any information related to Preschern Trading and, as you know, even beyond that trading and forwarded it to my counsel. And, actually, I think some of my own counsel did the same.</p> <p>Q. Did you have any files in your house physically?"</p> <p>A. I don't think so, no.</p> <p>Q. And where within your computer databases did you search?</p> <p>A. I have several computers, and I hit the search button for "FX," so wherever I could in my e-mail box and my hard drives.</p> <p>Q. Did you ask your accountant for any documents related to this litigation?</p> <p>A. No, because he takes the information I give him from the 1099, which is really the independent contractor that I issue to him. [169:12 - 171:6]</p>
Plaintiff's FX Transactions	<p>Q. What types of FX instruments did you transact in during 2007 to 2013?</p> <p>A: Options and futures.</p>
	<p>Q. Which specific FX instruments, such as FX swaps did you trade?</p> <p>A. I don't recall trading swaps. I do recall trading currencies and the crosses.</p> <p>Q. Did you make spot trades?</p> <p>A. The machine that I built makes spot trades, yes. [88:14-20]</p>
	<p>Q. Did your investment strategy have any asset sector focus?</p> <p>A. In terms of currencies, do you mean or . . . Well, I traded yen, Euro FX and some Swiss also.</p>
	<p>Q. Over what time period did you trade FX futures?</p> <p>A. The entire time.</p> <p>Q. And over what time period did you trade FX options on futures?</p> <p>A. The entire time I was active. [39:22-40:2]</p>
	<p>Q. During 2007 to 2013, how did you decide which FX instruments to buy or sell?</p> <p>A. I chose the two most liquid ones, which were the Euro and the yen. [40:14-17]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Did you trade FX over exchanges? A. Only on the CME, yes. Q. And Did you trade FX options on futures over exchanges? A. Yes. Q. On the CME? A. On the CME. [50:15-21]</p>
	<p>Q. What currencies did you trade FX futures in? A. Euro, yen and Swiss. [54:19-21]</p>
	<p>Q: Who was in charge of FX trading decisions at Preschern Trading? A. Me. Q. And you had sole responsibility for FX trading decisions? A: Yes. Q: And did you oversee anyone who traded in FX at Preschern Trading? A No. Because I had sole responsibility. Q: Did you trade on behalf of anyone at Preschern Trading? A: No. I traded for myself. Q: Did you have any clients? A I didn't have any clients, no. Q: So all of the trades at Preschern Trading were made on behalf of yourself? A: They were made on behalf of myself and through Lerner Trading as a side entity. [24:9 - 25:1]</p>

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Deposition of Plaintiff Michael Smith – Exhibit 117

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. And in your own words, what is this lawsuit about?</p> <p>A. This lawsuit is specifically about 16 banks manipulating the Foreign Exchange markets, both in the exchange rate and over the counter.</p> <p>Q. And when you say ““manipulate,”” what do you mean?</p> <p>A. Well, there’s different forms of manipulation. Manipulations they are being charged with was under the Exchange Act, and irregularities in their trading in the sense that they tried to control the markets. [9:17-10:2]</p>
	<p>Q. And who are the defendants?</p> <p>A. All 16?</p> <p>Q. An example.</p> <p>A. Okay. JPMorgan, Goldman Sachs. I am drawing a blank here. JPMorgan, Goldman Sachs, Credit Suisse, all the major institutional banks in New York.</p>
	<p>Q. How did the prices compare to prices in the FX spot market?</p> <p>A. Very similar. They traded – one is an inverse to the other.</p> <p>Q. Did you ever compare prices in the spot and futures market?</p> <p>A. Oh, sure. Yes. [64:16-22]</p>
	<p>Q. Was the spread between the bid and the offer relevant to your trading?</p> <p>A. Yes.</p> <p>Q. How so?</p> <p>A. On the cash prices, spread was – as the spread started tightening – you know, let’s say the cash price was 20, 25. Just give an example. There is big numbers ahead of that, like 125, 25. So the spread is 25 – 20, 25, and all of a sudden, the spread goes 20, 22, I know that the market is sort of quietening down. People tighten the spread because they want to make a certain price to get paid and get hit on in the cash price.</p> <p>Q. And the spread between the prices in the futures contracts was relevant to your trading?</p> <p>A. Yes. Yes. The spread – the futures contract was often a tighter spread than the cash market. That is why the people would come to the futures side. [66:9-67:1]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Did you ever trade FX futures based on your judgment and analysis of perception that futures contract prices were not in line with spot prices of the underline currency pair? *** THE WITNESS: Yes. Q. Why? A. Because if you are not cognizant of what is going on around you, you could get blindsided. Q. So in trading FX futures, is 2:00 p.m. an important time for daily, weekly, and monthly futures contract settlements? *** THE WITNESS: To me, it was, yes. Q. And why? Why was that important to you? A. Because that is settlement. Q. And were spot prices around the same time important for futures prices and settling? *** THE WITNESS: Yes, they were to me. Q. And why was that? A. Because it was settlement. Q. And how would the FX cash market price play into the FX futures settlement? A. Cash price would be directly related, you know, if you had a bid offer. But let's say you took the median on a bid offer, it was the median of the bid offer, and you quoted it, you add in the forwards, and you take the inverse. You would have a futures price. You would know exactly, you know, hey, this is worth settling. [87:5-88:14];[139:12-14]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups or classes of plaintiffs in this lawsuit? A. Yes. Q. Do you know which group or class you are in? A. I am in the exchange class. [9:12-16].</p>
	<p>Q. And why are you suing Credit Suisse? A. They are the ones that were colluding in the Foreign Exchange market.</p>
Plaintiff's Involvement in the Case	<p>Q. Can you describe for me your involvement in this litigation? A. Sure. I am a class representative. I am one of many. And I am here to see that justice gets done, and the people that were hurt in this collusion are rectified. Q. Do you speak to counsel? A. Yes. Q. How often?</p>

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	<p>A. Well, what do you mean “speaking”? Do you mean by e-mail or just by phone or in person? What do you mean by “speak”?</p> <p>Q. Either.</p> <p>A. Frequently. Once a week.</p> <p>Q. Do you ever meet with counsel?</p> <p>A. Yes.</p> <p>Q. How often?</p> <p>A. Once every – once every five or six months.</p> <p>Q. And how long do those meetings usually last?</p> <p>A. Hours. [10:12-11:5]</p>
	<p>Q. Can you tell me the steps you have taken to collect documents for production in discovery in this litigation?</p> <p>A. Well, I was sent monthly statements when I traded. I provided the monthly statements per request. And then I realized there were a number of years that I didn't have any monthly statements because in transferring computers or whatever, they got, you know. So I went and procured documents from the CME, daily documents of all my trading for the months that I didn't have. So I have complete records, I believe, from 2003 to 2012, '13, of all my – all my trades, daily or monthly.</p> <p>Q. So you collected both daily and monthly statements?</p> <p>A. I collected daily for the months that I didn't have. So that I had to get daily – if I was missing in '06, September of '06, I would have to go back, and if I couldn't get the month, I would get the dailies, the dailies.</p> <p>Q. And did you search your e-mails?</p> <p>A. Yes.</p> <p>Q. How were those searched?</p> <p>A. I kept a subtitle of statements. And I pulled the statements from there.</p> <p>Q. Did you collect any documents beyond the statements?</p> <p>A. Trading documents?</p> <p>Q. Any type of documents.</p> <p>A. I believe not.</p> <p>Q. Did you –</p> <p>A. I don't think I was requested to, either.</p> <p>Q. Did you have any nonelectronic files that you searched?</p> <p>A. I had some old hard statements. But those are just a replication of the ones I turned in electronically.</p> <p>Q. Aside from your clearinghouses, were there any other systems that you used to keep track of your trades?</p> <p>A. No.</p>

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	<p>Q. Did you have any computer hard drives or laptop hard drives or centralized servers that would have kept records of all your trades?</p> <p>A. I believe, but I don't own them anymore.</p> <p>Q. What happened to them?</p> <p>A. I had all my – some of my records that I had to go back and get the dailies for on a hard drive. And when I moved offices from my spreading downtown to back to my basement, I don't think I kept the computers, by accident.</p> <p>Q. Was anyone else involved in your document collection efforts?</p> <p>A. No. Other than the clearinghouses.</p> <p>Q. When did you start these efforts?</p> <p>A. To look for the documents?</p> <p>Q. Mm-hmm.</p> <p>A. Right when the – I believe the original production request went into effect. [205:6-207:12]</p>
Plaintiff's FX Transactions	<p>Q. So did you trade any other types of instruments besides futures?</p> <p>A. No, I believe I did not.</p> <p>Q. Did you trade any type of futures instruments besides Foreign Exchange futures?</p> <p>A. Yes, I did. [26:25-27:5]</p>
	<p>Q. So now I would like to focus a little bit more specifically on your FX trading strategy. Just to reiterate, what types of FX instruments did you trade in?</p> <p>A. On the trading floor of the Exchange, you are asking? Every day, every pit, every currency that was offered.</p> <p>Q. And only futures transactions in those currencies?</p> <p>A. Correct. [52:4-13]</p>

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Deposition of Plaintiff Casey Sterk – Exhibit 118

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. What is this lawsuit about?</p> <p>A. Banks have been caught colluding in chat rooms, manipulating currency prices. [10:16-18].</p>
	<p>Q. Can you identify generally who the defendants in this lawsuit are?</p> <p>A. Yes, Goldman Sachs, SocGen, Credit Suisse, HSBC, UBS, Barclays. There's 16 of you guys. [11:21-24]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand there are two classes or groups of plaintiffs in this action?</p> <p>A. I do.</p> <p>Q. And if you were to become a named plaintiff, as your attorney represented that you intend to become, do you know which group or class you would be in?</p> <p>A. Yes.</p> <p>Q. Which group or class?</p> <p>A. Exchange traded. [11:11-20]</p>
Plaintiff's Involvement in the Case	<p>Q. Can you please describe your involvement in the litigation?</p> <p>A. Can you give me more detail.</p> <p>Q. Without revealing the content of any conversations you had with attorneys, how often do you speak to counsel about the litigation?</p> <p>A. I speak to them regularly. They sent me e-mails which I stay up to speed on. I review documents they send me. We've met in person. I stay current on the news and any -- any breaking news.</p> <p>Q. How often do you meet with counsel?</p> <p>A. I met with him yesterday. Most of our discussions are over the phone.</p> <p>Q. And you speak to them regularly, how regular would you say?</p> <p>A. Various frequency.</p> <p>Q. Once a month?</p> <p>A. More than that.</p>
Plaintiff's FX Transactions	<p>Q. Did you invest in currency futures?</p> <p>A. I did.</p> <p>Q. Did you only invest in futures contracts?</p> <p>A. Correct.</p> <p>Q. Is that the same for all the accounts?</p> <p>A. Yes.</p> <p>Q. Did the account take positions in any other financial products other than FX?</p>

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	<p>A. Yes, they're listed in front of you.</p> <p>Q. Which other financial products?</p> <p>A. If you turn to 1285, these markets listed here.</p> <p>Q. Did this Dad's Original account take any positions that other accounts in the fund did not take?</p> <p>A. No. [27:17-28:4]</p>
	<p>Q. So all the accounts traded in the FX?</p> <p>A. Currency futures. [39:8-9]</p>

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Deposition of Plaintiff Mark Miller – Exhibit 119

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. Do you understand what this lawsuit is about?</p> <p>A. Yes.</p> <p>Q. And what is your understanding?</p> <p>A. That there's been price fixing and manipulation on the behalf of some large banks, to the detriment of people such as myself in the marketplace, in the realm of Forex and currency trading. [24:1-9]</p>
	<p>Q. And who are the defendants?</p> <p>A. I don't know all the defendants. I know some of them might be Deutsche Bank; JP Morgan; Credit Suisse, who you represent; Citibank; Bank of America; various others. [24:10-14]</p>
	<p>Q. And what are Forex products?</p> <p>A. Forex products are currencies, currency payers, traded over the counter.</p> <p>Q. Okay. So these are the over-the-counter markets, traded over the counter, you said?</p> <p>A. Yes.</p> <p>Q. Are these generally traded in what would be called the retail market?</p> <p>A. No. It's – it's a market I'm not too familiar with. It's – I'm mostly associated with futures and options on futures. As far as the over the counter, I'm not too familiar. I assume it's not retail, it's more of commercial or bank – bank-to-bank type market, in general.</p> <p>Q. Okay.</p> <p>A. Retail people do participate in it, but that was not a very big part of our business.</p> <p>Q. And do you recall around when you would have traded Forex?</p> <p>A. I'm thinking around 2005, '6, '7. I don't remember the year.</p> <p>Q. But this was a small part of your trading; is that correct?</p> <p>A. Very tiny. [14:24-15:23]</p>
	<p>Q. Okay. Do you know what is alleged in this complaint?</p> <p>A. I know what is alleged is price manipulation, having to do with price fixing in different situations, including chat rooms, which painted bid offer gave different distinguishing marks that created a trading environment that was not fair, which affected someone at my level, to an extent. [143:20-144:4]</p>
	<p>Q. Is it your claim that spreads on all FX transactions were manipulated by the defendants?</p>

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	<p>A. I have no way to say if all of them. The word "all" is too general. I don't know.</p> <p>Q. And what is your belief? What is your view on that?</p> <p>A. It's my view. My assumption is they were to an extent manipulated, or always are manipulated. It's part of the trading environment that I participate in.</p> <p>Q. What do you mean by "always are manipulated"?</p> <p>A. I mean that the bid offer that is being made by market makers comes from large institutions and is filtered down towards the retail client at the bottom of the chain. So my assumption is that the people who make the markets are – have the ability to create them; and, therefore, control or manipulate them to a degree. [145:1-20]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Okay. Earlier today, I believe Counsel asked you about the class that you represented. And you mentioned something about – let me see if I can find it here. That you – I believe you said you didn't know the technical term and that you were representing the class in general, but you don't know the two designations of the classes; is that correct?</p> <p>A. At the moment of that, I didn't understand exactly what I was being requested to answer. I understand I'm representing the exchange class –</p> <p>Q. Okay.</p> <p>A. – of the suit.</p> <p>Q. Okay. And is that understanding – is that your understanding because reading this paragraph 39 –</p> <p>A. That helps clarify it.</p> <p>Q. Okay. So that helped refresh your recollection as to which class you're representing here?</p> <p>A. Yes. Early on in the interview it was – I just had a brain freeze. [157:25-158:24]</p>
Plaintiff's Involvement in the Case	<p>Q. You said you were not involved in that collection; is that correct?</p> <p>A. Right. The people who did it would have been – there was an outside firm that came to our office for, I think, almost a week. And they were up in our conference room, and they were digesting data and pulling information. So we provided them with whatever they needed. So I think they pulled most of the documents.</p> <p>Q. And is –</p> <p>A. In addition to that, it might have been my father or compliance officer or other people. But I personally didn't, because I don't – I'm a trader and I don't maintain all those documents. They're kind of done on my behalf. [149:9-25]</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Plaintiff's FX Transactions	<p>Q. So turning – I'm sorry. Going back to your Mark Miller personal account that we were just discussing. Did you conduct FX trading in that account?</p> <p>A. I don't recall. I only did a handful of Forex trades, very minimal. And I don't know if I did it in my Mark Miller personal or some of my other accounts.</p> <p>Q. Did you trade FX futures in that account?</p> <p>A. Yes, certainly.</p> <p>Q. Okay. And did you trade FX options in that account?</p> <p>A. Yes.</p> <p>Q. Turning next to your Roth IRA account.</p> <p>A. Okay.</p> <p>Q. Did you trade FX futures in that account?</p> <p>A. Yes.</p> <p>Q. Okay. Did you trade FX options in that account?</p> <p>A. Yes. [35:15-36:10]</p>
	<p>Q. Okay. What types of instruments do you trade in, both FX and non-FX instruments?</p> <p>A. All the instruments I trade are futures and options on futures. There was just a brief stint where I was trading OTC Forex, and quickly learned that I didn't like trading it, so I have very few trades in that, like only a handful. But everything else, 100 percent is futures and options on futures.</p> <p>Q. And within the futures and options on futures trades, what products would you trade in?</p> <p>A. Predominantly equity futures. But I've also traded a little bit of everything, almost absolutely everything – softs, metals, currencies, grains, bonds, so a wide spectrum. But it's weighted more towards the equity futures. [39:18-40:2]</p>

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**Deposition of Michael Iuliano, General Counsel of Plaintiff
Value Recovery Fund L.L.C. – Exhibit 120**

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. In your own words, what is this lawsuit about?</p> <p>A. So it's about the rigging of the Foreign Exchange Market by the defendant banks, where they are alleged to have engaged in collusion, whether through chat rooms or other means, to fix the price of foreign currency. And in more detail, it's when we trade currency, it's – it goes out to the fourth decimal point. And I think the allegation is around that basically that fourth decimal point, where they would fix the amount at a level to take a piece – to fix the price to make the spread wider instead of narrower for the trades. [11:5-18]</p>
	<p>Q. How was Camulos Master Fund affected by the alleged manipulation of fixed rates?</p> <p>A. Well, as –</p> <p>MR. BOARDMAN: Sorry, objection. Calls for a legal conclusion.</p> <p>A. The allegations that the spread were fixed, they were wider than they should have been. If that's true on either the buy side or the sell side, if the spread is wider, you get less value for your trade. So if the allegations are correct, and I'm sure a lot of them are – all, I don't know, but there's – there are certainly numerous examples where it is likely fixed. We were harmed by a wider spread than what should have been. [49:10-23]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups of classes of plaintiffs in this suit?</p> <p>A. I do.</p> <p>Q. Do you know which group or class Value Recovery Fund is in?</p> <p>A. I do.</p> <p>Q. Which one?</p> <p>A. The OTC class, Over the Counter. [9:21-10:3]</p>
Plaintiff's Involvement in the Case	<p>Q. Were you involved in the drafting of this Complaint?</p> <p>A. Yeah, I was. In regards to the – sort of the nature of the case, the facts, I was involved in that, I'd say heavily. And in the other areas of the case, I certainly read through it and commented on it.</p> <p>Q. What types of information did you provide for the facts and the nature of the case?</p> <p>A. You know, my recollection is both in terms of who we are and what we did, I may have – that may have been my own writing, I don't remember, but I probably provided that</p>

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	myself. And in terms of the facts of what happened, you know, just the way we traded, right, our understanding, I think I commented on, on what we may have done, how the FX trading worked for us. [16:10-17:1]
	Q. Were you involved in the draft of the Second Amended Complaint? A. The second, I was, yes. Primarily with respect to who we are and what we did. [18:23-19:1]
	Q. Can you walk me through the steps Value Recovery has taken to collect documents for production in this litigation? A. Yeah, I mentioned previously, but it – I physically went through all of our files. They're housed in two places in our offices. And in our – our portfolio manager's basement, actually, as he is, we keep some of our superfluous documents. We went there and looked at documents to see if there was anything that was responsive because it's a dated litigation. But then we had a third party come in, Precision, and they ran a search of – negotiate, I believe, the agreed to search terms, through our entire computer system, which really is every document from the existence of the fund that's been on electronic format. [59:4-19]
	Q. You mentioned files stored in the house of your portfolio manager. Who's the portfolio manager? A. Richard Brennan. Q. Roughly how many files are stored? A. Related to the case, none that we found. He had personal files, tax files, things of that like. But we did search and check. Q. What were you searching for when looking through those files? A. Comprehensive list of physical documents, anything that was relevant to the transaction – to the case, rather. [60:12-25]
	Q. Can you tell me a little bit about how the digital files were searched in this case? A. Just generally. We hired a third party search firm. They were given the agreed upon search terms. They ran the search. It took – it may have been a week. It was multiple days that they ran the search. We have a number of different computer files. They searched everything. They came back with an extensive list of documents. I believe the next step was they then came with relevant documents. There may have been – it was multiple thousand; I don't remember the number. Over the course of a few weeks, I went through all

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ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	the documents. There were certain things that were attorney/client privilege. Some of the search terms were quite broad. So a document that was a hit may have been, you know, a news article about, you know, a basketball game, may have been of no relevance. But anything that was relevant, we looked at, we searched with the assistance of counsel. We then submitted the set of documents. I think it was on a hard drive. It may have been physical. I don't remember how the documents were delivered. [61:1-25]
Plaintiff's FX Transactions	Q. What types of FX transactions did Camulos engage in with directly with Barclays? A. Barclays, primarily outright forwards. We had one swap setup, and the swaps are set up as currency baskets. That was with Barclays. It wasn't a large percent of our holdings. But for Barclays, it would have been outright forwards and the swap transaction. [26:16-23]
	Q. Which types of FX transactions did Camulos engage in with Goldman Sachs? A. FX spots and outright forwards. I believe we had – we had a handful of outright forwards with them, but primarily FX spots with Goldman Sachs. [33:24-34:4]
	Q. What type of FX instrument did Camulos trade with Morgan Stanley? A. I think just outright forwards. [42:9-11]
	Q. Did you execute FX transactions with JP Morgan? A. Yes. Q. What types of instruments? A. FX spots, primarily. Probably outright forwards. [44:24-45:4]

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Deposition of Plaintiff Peter Rives – Exhibit 121

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. And what is this litigation about?</p> <p>A. This litigation is about some employees at banks working together to fix or change or create prices that are beneficial to them and not beneficial to anyone else. [19:20-24]</p>
	<p>Q. Do you know who the defendants are?</p> <p>A. Sure. There's a long list. JP Morgan, Morgan Stanley, UBS, RBS, Citi, Goldman, HSBC. If they're a bank, they're on this list. Oh, and you guys. We can't forget Credit Suisse – Suisse, sorry. [19:25-20:6]</p>
	<p>Q. When did you first hear of the alleged misconduct?</p> <p>A. You know, it started right after the LIBOR rate issue, and that's how it – that's how I first heard about it, because it was of the vein of – they got the banks doing the LIBOR rate fixing, and now there's talk and rumors about getting together to fix prices and to discuss getting certain prices for certain orders filled. And I remember being shocked. And then because –</p> <p>Q. Shocked – sorry to cut you off.</p> <p>A. And then specific – go ahead.</p> <p>Q. Shocked in reference to the LIBOR rate or shocked in reference to the –</p> <p>A. That there could be something else.</p> <p>Q. Okay.</p> <p>A. And then – yeah. That was – that was when I first heard of it.</p> <p>Q. When, about? Could you give an estimate of a date about when? Month-wise? Year-wise?</p> <p>A. No, I don't remember a date. I remember it was after – it was not too long after the LIBOR got . . .</p> <p>Q. Do you have any idea what year that was?</p> <p>A. I honestly don't remember.</p> <p>Q. It was after the class period?</p> <p>A. It was – it was – I don't remember. I don't even want to guess. I don't remember. That's when I first heard about this specific. I thought it was just rumors and everything until Bob mentioned it to me. [130:25-132:9]</p>

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Plaintiff's Knowledge of Role as Class Representative	<p>Q. And do you understand that there are two groups, or classes, of plaintiffs in this suit?</p> <p>A. Yes.</p> <p>Q. And which are you a member of?</p> <p>A. Exchange.</p> <p>Q. Do you know the name of the other one?</p> <p>A. Yeah. It was the OTC, I think.</p> <p>Q. And are you a member of that class, the OTC class?</p> <p>A. No. [20:7-17]</p>
	<p>Q. Are you a plaintiff for the OTC class?</p> <p>A. No. I think – I'm a plaintiff on the exchange side. [109:6-11]</p>
	<p>Q. Why did you join this litigation?</p> <p>A. I thought it was important that people know that there was a chance that these banks were out there doing things that were, you know, behind the scenes, colluding, taking advantage of situations that were affecting the little guy. [132:18-24]</p>
Plaintiff's Involvement in the Case	<p>Q. Are you aware that documents have been produced on your behalf during the course of this litigation?</p> <p>A. Yes.</p> <p>Q. Can you tell me the steps you and your counsel have taken to collect documents for production in this litigation?</p> <p>A. We had a lead – Bob Miller was helping get some documents together. We were assisting him with getting the documents together.</p> <p>Q. How did you provide assistance?</p> <p>A. Oh, it's usually the statements, looking up statements, monthly statements, from way back when.</p> <p>Q. How did you retrieve these statements?</p> <p>A. All electronically.</p> <p>Q. Did you have any paper statements that you may have searched?</p> <p>A. No.</p> <p>Q. Do you maintain paper statements?</p> <p>A. No.</p> <p>Q. How did you search? E-mails? How is this information stored that you retrieved it from?</p> <p>A. Yeah. It was all – it was all from past statements, all stored electronically. [34:16-35:17]</p>

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	<p>Q. Okay. So are there separate efforts going on where you may be asked to help with the production; but otherwise, Bob Miller is overseeing the production on your behalf?</p> <p>A. Well, all I know is Bob was, like, the lead. And we assisted where – wherever he needed assistance with any of the collection of information. I mean we did some of it, and – outside our regular duties of running the desk. [39:15-24]</p>
	<p>Q. E-mail correspondence recording your activity or communications in relation to your personal accounts for which you are claiming injury from.</p> <p>A. Yeah. The only – the only thing you see on personal accounts regarding e-mails are going to be my statements. [43:3-9]</p>
	<p>Q. Do the produced documents contain records of all the on-exchange FX transactions that you believe were harmed by the alleged conduct?</p> <p>A. Yes. [43:23-44:2]</p>
Plaintiff's FX Transactions	<p>Q. During the class period, did you invest in on-exchange FX instruments for your personal accounts?</p> <p>A. Yes.</p> <p>Q. During – what dates during the class period?</p> <p>A. I'd have to look at my statements to give you the exact dates.</p> <p>Q. Would you imagine it spans the entire duration of the class period?</p> <p>A. Probably most of it. [25:3-13]</p>
	<p>Q. You traded in options on currency futures?</p> <p>A. You know, I don't remember trading options on currency futures. If I did, it was very sparingly.</p> <p>Q. Okay.</p> <p>A. But you know, like I said, I'd have to look. But my gut says, in that time frame, I didn't trade options on currencies. But I'd have to look back to firm that, to give you a . . .</p> <p>Q. So definitely, a vast majority was just plain currency futures?</p> <p>A. Yes.</p> <p>Q. Okay. And you didn't trade any OTC Forex?</p> <p>A. No. [50:3-19]</p>

APPENDIX G
SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

Deposition of Jasbeena – Chief Investment Officer
Syena Global Emerging Markets – Exhibit 122

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
Knowledge of the Case	<p>Q. And can you describe a little bit of what this lawsuit is about?</p> <p>A. Okay. It is about the manipulation of the foreign exchange rates. [15:12-20]</p>
	<p>Q. Who are the defendants?</p> <p>A. A number of banks.</p> <p>Q. Okay. Any specifically?</p> <p>A. Off the top of my head, Deutsche Bank, yourselves [Credit Suisse], UBS, Bank of America, Standard Charter. [15:21-16:3]</p>
Plaintiff's Knowledge of Role as Class Representative	<p>Q. Do you understand that there are two groups or classes of plaintiffs in this lawsuit?</p> <p>A. Yes.</p> <p>Q. Do you know which group or class Syena Global is in?</p> <p>A. Yes.</p> <p>Q. Which class?</p> <p>A. Over the counter. [15:3-11]</p>
	<p>Q. And you said you were part of the OTC group. What's the OTC Group?</p> <p>A. The OTC group is a group that – basically, it's related to the types of trades we made, and we're grouped like that. I mean, there's many defendants in different situations. And we're in the – we're in the group where the trades were OTC. [12:20-13:4]</p>
Plaintiff's Involvement in the Case	<p>Q. Who at Syena Global decided to bring this lawsuit?</p> <p>A. I did. [16:4-6]</p>
	<p>Q. Yes. Are you aware of any documents relating to this case that were ever destroyed?</p> <p>A. No. [259:6-9]</p>
	<p>Q. Yes. Did you attempt to collect FX trading data from your investment managers?</p> <p>A. I am the investment manager.</p> <p>Q. So were you able to collect all of your FX trading data?</p> <p>A. Yes.</p> <p>Q. Have you produced all the FX trading data that you were able to collect?</p> <p>A. Yes. [64:14-24]</p>

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SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Yes. Walk me through the steps Syena has taken to collect documents for production of discovery in this litigation?</p> <p>A. My lawyers have reached out to all parties for electronic communications and have made I think imaging of all my hard drive at work.</p> <p>Q. When you say all parties, who do you mean?</p> <p>A. M.S. Howells, Partners, the relevant parties that hold all this information.</p> <p>Q. Pershing?</p> <p>A. My attorneys would know that.</p> <p>Q. Do you know what files were searched?</p> <p>A. No, I do not.</p> <p>Q. Did you provide entire hard drives to your attorneys?</p> <p>A. Yes.</p> <p>Q. For the entire relevant period, 2007 to 2013?</p> <p>A. Yes. I also provided hard copies of statements and confirmations as requested.</p> <p>Q. Yes, sure. Did you provide the entire hard drives in the relevant period?</p> <p>A. Oh, yes.</p> <p>Q. Did you provide all of your hard copy files from the relevant period?</p> <p>A. Yes.</p> <p>Q: I guess I'm asking if there are any hard copy files you had for the relevant period 2007 to 2013 relating to Syena that you did not provide to your attorneys.</p> <p>A. No. [255:8 - 257:5]</p>
	<p>Q. What systems does Syena use to keep track of financial transactions?</p> <p>A. Hard copies, electronic communications.</p> <p>Q. Were those systems searched?</p> <p>A. Yes. [257:7-12]</p>
Plaintiff's FX Transactions	<p>Q. Sure. What types of FX instruments did you trade in?</p> <p>A. Just spot currency, whatever the rate was at the time that I wanted to cover, go long or go short.</p> <p>Q. Did you use futures?</p> <p>A. No.</p> <p>Q. Options on futures?</p> <p>A. No.</p> <p>Q. FX forwards?</p> <p>A. No.</p> <p>Q. Did you ever consider using these instruments?</p> <p>A. No. [32:9-32:23]</p>

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SUMMARY OF PLAINTIFFS' DEPOSITION TESTIMONY

ADEQUACY FACTOR	QUOTATIONS AND CITATIONS
	<p>Q. Who is responsible for foreign exchange trading for Syena Global?</p> <p>A. I was.</p> <p>Q. Anyone else?</p> <p>A. No. Well, again, same thing. I would make the -- I would execute the trade via the trade desk at M.S. Howells. I would send them an email.</p> <p>Q. But they didn't make the decision?</p> <p>A. No. [29:24 - 30:11]</p>
	<p>Q. And you made the investment decisions?</p> <p>A. Yes. [37:16-18]</p>